Medical Lib.
MAR 29 1921

The

British Medical Journal

The Journal of the British Medical Association.

INCLUDING AN EPITOME OF CURRENT MEDICAL LITERATURE.

WITH SUPPLEMENT.

No. 3138. SATURDAY, FEBRUARY 19, 1921. **Price 1/3**

OXFORD MEDICAL PUBLICATIONS

READY 21st FEBRUARY.

ORTHOPÆDIC SURGERY OF INJURIES.

Edited by SIR ROBERT JONES, K.B.E., C.B., F.R.C.S.

In two Royal 8vo. Volumes. Cloth. 1,300 Pages, fully Illustrated in colour and black and white.

HENRY FROWDE, HODDER & STOUGHTON,
17, Warwick Square, Newgate Street, London, E.C.4.

ESSAYS ON THE
SURGERY OF THE TEMPORAL BONE.
By Sir CHARLES BALLANCE, K.C.M.G., C.B., M.V.O., M.S., F.R.C.S.,
Consulting Surgeon to St. Thomas's Hospital, &c.
Illustrated by 125 Plates (40 in colour), and 120 Figures.
In 2 volumes. Medium 4to. Price 5 guineas.

MACMILLAN & Co., LTD.,
St. Martin's Street, London, W.C.

SECOND EDITION OF
CECIL WEBB-JOHNSON'S
TWILIGHT SLEEP.
FOREWORD BY
COMYNS BERKELEY, M.C., M.D., F.R.C.P.,
Including all the latest work in England on the subject.
Price 10s. 6d. net.
"The best book on this subject." (*Vide press.*)
BUTTERWORTH & Co.,
Bell Yard, Temple Bar, London, W.C.2.

THIRD EDITION. Pp. viii + 92, with 4 Plates.
Price 4s. 6d. net. (postage 4d.).
THE INTENSIVE TREATMENT OF SYPHILIS
and Locomotor Ataxia by Aachen Methods.
By REGINALD HAYES, M.R.C.S.
The Lancet says: "No better exposition of the method as practised there can be found than that contained in this little book."
BAILLIÈRE, TINDALL & COX, 8, Henrietta Street, London, W.C. 2.

J. & A. CHURCHILL'S NEW BOOKS.

HEALTH OF THE INDUSTRIAL WORKER. By E. L. COLLIS and M. GREENWOOD. 30s. net.
JEX-BLAKE'S CHEST & ABDOMEN SIGNS. 9s. 6d. net.
KLEEN'S MASSAGE. Trans. by M. L. DOBBIE. 2nd Edition. 32s. net.
BACK & EDWARDS' SYNOPSIS OF SURGERY. 15s. net.
MENNELL'S MASSAGE. 2nd Edition. 21s. net.
BOWLBY & ANDREWES' PATHOLOGY. 7th Edition. 30s. net.
GASK & WILSON'S SURGERY. 42s. net.
HURRY'S POVERTY, VICIOUS CIRCLES. 2nd Edition. 15s. net.
THE MEDICAL DIRECTORY, 1921. 36s. net.
J. & A. Churchill, 7, Great Marlborough St., W.1.

By CHARLES J. HEATH, F.R.C.S.,
Consulting Aurist, Metropolitan Asylums Board, late Surgeon, Throat Hospital, Golden Square, London.

OTITIS MEDIA (Mastoid Disease)
Its Symptoms, Diagnosis, Prognosis, and Treatment by Modern Methods,
thus saving the hearing of the discharging ear with perforated drumhead.
"We have no hesitation in describing Heath's paper as epoch-making."—*St. Bartholomew's Hospital Journal.*
"As long ago as 1906 he expounded his views upon the cure of chronic suppuration of the middle ear without the removal of the drum or ossicles, or loss of hearing. Since then he has made the matter his constant study and observation, proving conclusively the value of the conservative mastoid operation which he introduced."—*Medical Press.*
5s. net. Also

THE NATURE AND CAUSES OF CATARRHAL, "THROAT,"
or Hereditary Deafness (The Relief of Tinnitus Aurium).
A new method of treatment with some illustrative cases. 5s. net.

BAILLIÈRE, TINDALL & COX,
8, Henrietta St., Covent Garden, London, W.C. 2.

By FREDERICK W. PRICE, M.D., F.R.S.(Edin.), Senior Physician to the Great Northern Central Hospital, Physician to the National Hospital for Diseases of the Heart, London.

DISEASES OF THE HEART.
Their Diagnosis, Prognosis, and Treatment by Modern Methods.
With a Chapter on the Electro-Cardiograph.
Demy 8vo, 484 pp. Very fully Illustrated. 21s. net.
Lancet.—"By great care, and by the use of an amazing amount of material, he has accomplished what many readers have been waiting for, giving us a complete account of the diagnosis, prognosis, and treatment of heart diseases by modern methods in association with all the invaluable teaching bequeathed to us by the older masters of clinical observation."
British Medical Journal.—"The book presents a comprehensive account of modern knowledge of cardiology."
Dublin Medical Journal.—"It is probably destined to take the place in the library of the present day physician that was occupied some twenty or more years ago by Sir W. Broadbent's well-known work."
Midland Medical Review.—"It is impossible to enumerate the many excellencies of this book."
London:
HENRY FROWDE AND HODDER & STOUGHTON.

8vo. 25 Illustrations. Cloth, 8s.; paper, 6s. net.
ELECTRIC IONIZATION:
By A. R. FRIEL, M.A., M.D., F.R.C.S.I.
"Merits an unqualified success."—*Dr. S. Leduc.*
Bristol: JOHN WRIGHT & SONS, Ltd.

By C. HAMILTON WHITEFORD,
M.R.C.S., L.R.C.P.
ACUTE APPENDICITIS.
(Practical Points from a 25 years' experience.)
Price 4s. net.
London: HARRISON & SONS,
44-47, St. Martin's Lane, W.C. 2.

SKIN DISEASES.
By HALDIN DAVIS, M.B.Oxon., F.R.C.S.
Many Illustrations, both Colour and Half-tone.
2nd Ed. Ready shortly. Publd. by HENRY FROWDE,
17, Warwick Sq., Newgate Street, London E.C. 4.

THE

MARVELLOUS X-RAY PLATE

"IMPEX"

(Patents applied for in all countries.)

Invented by Dr. LEONARD LEVY, M.A., F.I.C., Chief Chemist of the Cox-Cavendish Electrical Co., Ltd.,

MANUFACTURED UNDER LICENCE BY THE IMPERIAL DRY PLATE CO., LTD.

The introduction of this remarkable X-ray Plate has been heralded by the leading radiologists as the greatest advance in Radiology since its advent. Its outstanding feature is that it reduces exposures to

ONE TWENTIETH OF THE NORMAL.

This and other remarkable features are briefly summed up hereunder:—

1. Normal exposure of 40 seconds is now 2 seconds.
2. Instantaneous Radiography becomes routine practice.
3. No intensifying screen required, thus no cassette to load.
4. Minimum exposure of operator and patient.
5. Great saving of wear and tear on tubes.
6. Grea contrast in density, even with rays of high penet ation, thus securing excellent detail through thick parts.
7. "Soft" or "hard" rays may be used without changing ratio of exposure.
8. Complete absence of granularity.

West End Showrooms: 105, GREAT PORTLAND STREET, W. 1.

FULL PARTICULARS AND PRICES POST FREE ON REQUEST.

IMMEDIATE DELIVERY

Scottish Showrooms: 15, HANOVER STREET, EDINBURGH.

THE COX-CAVENDISH ELECTRICAL CO., LTD.,
Twyford Abbey Works, Harlesden, London, N.W. 10.

NAB SOLVENT

(REGD.)

—BOOTS—

for the Intramuscular Administration of

NOVARSENOBENZOL

THIS glucose solvent is prepared from a modification of Davies' Solvent.—*See LANCET, November 28th, 1918.*

It will keep indefinitely, as it is sterilised after the ampoules are filled and sealed. It contains a mild non-irritating antiseptic, which enables the solvent to be used aseptically some time after opening.

Box containing 12 ampoules 7/6 *Box containing 6 ampoules* 4/-

Special Terms to clinics and large users.

SUPPLIES OF BOOTS SPECIALITIES MAY BE OBTAINED THROUGH — ANY OF THE 600 BRANCHES OF *BOOTS THE CHEMISTS* —

Boots Pure Drug Co. Ltd.,

Manufacturing Chemists and Makers of Fine Chemicals,

STATION STREET, NOTTINGHAM.

A British Medical Association Lecture

ON

VACCINE THERAPY IN REGARD TO GENERAL PRACTICE.*

BY

ALEXANDER FLEMING, F.R.C.S.,

DIRECTOR OF THE DEPARTMENT OF SYSTEMATIC BACTERIOLOGY AND ASSISTANT DIRECTOR OF THE INOCULATION DEPARTMENT, ST. MARY'S HOSPITAL.

I HAVE been practising vaccine therapy since it was in its infancy, and as time goes on I find myself more and more convinced of its efficacy, not only for the more severe cases which are to be seen at a hospital, but also and more especially for the lesser ailments which seldom appear at a hospital, but with which the practitioner has much to do.

An enormous amount of work has been done in the elucidation of the changes which take place in the animal body following the injection of a vaccine and much still remains obscure, but I confine myself to putting before you the clinical aspects of vaccine therapy in general, and to dealing with the treatment by vaccines of certain conditions, more especially those in which there have been advances made in the last few years.

DEFINITION OF A VACCINE.

A vaccine is a substance which, when injected into the animal body, induces the formation of specific antibodies.

This definition makes the term "vaccine" synonymous with the word "antigen." Originally vaccines were differentiated as being preparations of bacteria, but now various protein extracts—for example, pollen extract—are used in the same way in the treatment of disease, and there seems no reason why the term vaccine, if retained at all, should not be used in the wider sense to include all antigens. In the narrower sense, a vaccine may be defined as a standardized suspension of micro-organisms in an inert fluid.

AUTOGENOUS AND STOCK VACCINES.

An autogenous vaccine is a vaccine prepared from cultures obtained directly from the patient. A "stock vaccine" is made, not from cultures obtained from the particular patient who is being treated, but from cultures of the same type of microbe as that which is affecting him. In the preparation of a stock vaccine a considerable number of strains should be employed in order to eliminate as far as possible any small differences there may be in the individual strains.

Should a Stock Vaccine be Used or an Autogenous One be Prepared?

This is not always an easy question to answer. In practice it is frequently dealt with from the point of view of expediency. In many cases where the infecting organism is easy to cultivate and the vaccine is easy to prepare, it is less trouble to prepare an autogenous vaccine than it is to identify the organism exactly. On the other hand, the isolation of the microbe and the preparation of the vaccine is frequently a very tedious and laborious proceeding, and in such cases, if the nature of the infecting agent is obvious, then a stock vaccine is often employed and an autogenous vaccine made only if the stock vaccine fails. In connexion with this question four different classes of cases have to be considered.

Class 1.—Where the vaccine is to be used for prophylaxis.

It is clear that here we have no choice. Only stock vaccines can be used. The fact that stock vaccines have been used with such signal success in the prophylaxis of typhoid, paratyphoid, cholera, plague, and the catarrhal infections of the respiratory tract, is of the utmost importance in that it shows that it is not necessary to insist on a vaccine being made of a microbe of exactly the same parentage as the infecting microbe so long as it belongs to the same species.

Class 2.—Where the nature of the bacterial infection is known but a culture of the microbe cannot readily be obtained from the patient.

Such conditions occur in connexion with tuberculous infections or where the infection is deep-seated—for instance, in the joints or glands. In such cases, again, there is almost no choice and we have to use stock vaccines, and the results which have been obtained with these in such cases show that good immunizing responses can be induced.

Class 3.—Where, owing to the profusion of contaminating microbes, it is difficult to identify and differentiate with sufficient sharpness one microbe from another of the same morphological species.

This applies especially to chronic catarrhal conditions of the respiratory and alimentary tracts, to putrid infections of wounds, and to the erosions often associated with malignant tumours. Here only a very experienced bacteriologist will be able to make satisfactory autogenous vaccines. In some cases it is quite impossible from the examination of a single specimen to say which of the many microbes present is the infecting agent, and in almost all it is extremely difficult to say which of the many varieties of streptococci is really causing the infection and which are merely leading a saprophytic existence. It will be advisable in many such cases, therefore, for treatment, and still more for prophylaxis, to employ the polyvalent stock vaccines made from a large number of strains of the microbes in question, especially as the stock vaccine can be prepared from cases in which there is no doubt as to the nature of the infection.

Class 4.—Where the infecting microbe can easily be obtained from the patient in pure culture.

These cases are very common, and when we have to choose between an autogenous and a stock vaccine in such conditions we have to balance the possible advantage of an autogenous vaccine against the labour and expense involved in procuring it.

A stock vaccine is indicated when the infecting organism belongs to a group the members of which differ very little among themselves. Thus, in staphylococcus infections, a stock vaccine will in almost all cases give as good results as an autogenous, and in some few cases the stock vaccine will prove the more beneficial. Occasionally a strain is encountered which proves to be a bad antigen, and if such a strain is isolated from a patient and an autogenous vaccine made little benefit will be derived from its use, whereas in the same case the stock vaccine, containing, as it does, a number of strains which have proved to be good antigens, would give a good result.

With *Streptococcus pyogenes* also, which is the cause of erysipelas, cellulitis, lymphangitis and many other septic conditions, it has been shown that if an animal is immunized to one strain its serum will agglutinate to the same extent all the strains. This experimental observation is in accordance with the fact observed clinically that *Streptococcus pyogenes* vaccine is one of the most effective of the stock vaccines.

Some species of bacteria, such as pneumococci, which were formerly thought to be very homogeneous groups, have recently been split up by immunological methods into three or four subgroups, and it is essential that a stock vaccine of these organisms should contain representatives of all the groups. When this is done stock vaccines of these organisms are very effective.

In connexion with some bacteria, such as *B. proteus*, it has been found that some of the strains when injected into animals give a good immunizing response against all the different strains of the microbe, while others give immunity only to one or two strains. When dealing with such microbes it is essential that the stock vaccine should be made from strains of general antigenic power and not from strains which are merely partial antigens. If the stock vaccine is not made in this way it is better to use an autogenous vaccine.

Other organisms, such as Pfeiffer's bacillus of influenza, differ even more one from another in their antigenic powers, so that if an animal is immunized with only one strain its serum will agglutinate that strain and not more than a very small proportion of the other strains. In such a case the stock vaccine must be made from a very large

* Delivered before the Maidstone Division of the British Medical Association.

number of strains to ensure a wide polyvalency. A stock vaccine of Pfeiffer's bacillus made in this way has proved extremely efficacious, but in view of the immunological differences between the different strains an autogenous vaccine should be preferable.

A stock vaccine is indicated also in acute cases where it is desired to proceed with vaccine therapy at once without waiting for the preparation of an autogenous vaccine. In such cases it may be given in small doses while the autogenous vaccine is being prepared. If this is done it will often be found that by the time the autogenous vaccine is prepared the condition will have improved to such an extent that there will be little need to use it.

It is desirable to use an autogenous vaccine (*a*) when the infecting agent belongs to an ill-defined group of microbes. This is well exemplified in the so-called "*B. coli* infections," for the name is loosely applied to a large group of organisms which, as regards their antigenic properties, are very different. It is therefore more satisfactory in such infections to employ an autogenous vaccine. (*b*) When the infection is severe and it is felt to be too great a risk to wait to see whether the stock vaccine is effective; but it is wise in such cases to give a small dose of the stock vaccine while the autogenous one is being prepared. (*c*) When treatment with a stock vaccine has failed.

Clinical Effects.

The clinical effects of the injection of a bacterial vaccine may be divided into two classes: (*a*) toxic and (*b*) immunizatory.

Toxic Effects.

These follow soon after the injection and the term "reaction" is applied to them. They fall under three headings:

1. *Local Reaction.*—This is the effect produced at the site of the inoculation. It varies enormously in the same individual with different vaccines and in different individuals with the same vaccine, and the intensity of the reaction has no known bearing on the general changes occurring in the individual in response to the inoculation. It varies from nothing at all to a brawny swelling extending for some distance from the site of the inoculation. Usually it consists merely of a slight local swelling and tenderness, and causes little discomfort. Apart from this discomfort it is of no importance. The local reaction is always more severe when the injection is made in a region which is subject to pressure of the clothing, or which does not contain much subcutaneous fat, and is situated over muscles which are constantly in use (for example, the forearm). The best sites for inoculation seem to be in women about two inches below the centre of the clavicle or behind the shoulder, and in men the flank also is very suitable.

2. *Focal Reaction.*—This is the term applied to the effect of an inoculation of vaccine on the focus of infection. With a small dose there is no apparent focal reaction. With a larger dose there is some increase of the inflammatory signs in the infected focus. With a very large dose there may be a very great exacerbation of the symptoms which may result in the necrosis of the infected tissues. With the average dose there is, however, little or no focal reaction.

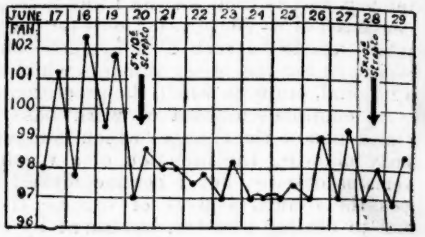
3. *General Reaction.*—Small doses of vaccine are not followed by any general toxic manifestations, but very large doses are apt to be followed after a few hours by signs of a general intoxication. A mild general reaction consists merely of a little malaise, but if the reaction is severe then there may be rigors, sweating, high fever, and even diarrhoea, sickness, or collapse. Doses of vaccine causing severe reactions should never be used. This general reaction is caused in part by the toxic substances which are introduced in the vaccine, but it is also probably caused largely by the absorption of toxic material from the infected focus which has at the same time been much disturbed by the focal reaction.

Immunizatory Phenomena.

1. *Focal.*—These focal changes vary so much in their character, and the time it takes for any appreciable benefit to ensue varies so much with the nature of the infection, that it is not possible to generalize further than to say that after twelve hours or longer there is a diminution in the inflammatory symptoms.

2. *General.*—Usually the first beneficial effect following the administration of a vaccine is a feeling of well-being in the patient. When small doses are used this may follow within an hour or two, and it is frequently very striking. When the patient is running a slight temperature, a small dose of vaccine administered in the morning will bring the temperature down the same evening. This fall in the temperature coincides with a rise in the antibacterial content of the blood.

It has frequently been urged that in acute cases it is of little use to give vaccines, as it takes a week or more before any result of the vaccine can be seen. As I have stated above, the beneficial result of a suitable dose of vaccine may be manifest in a few hours, and a reference to the accompanying chart will show the effect of the correct dose of vaccine on the temperature chart. It will be observed that the effect of the vaccine administered about midday was to prevent the evening rise of temperature the same day and to keep the temperature down for some days. The same effect on the temperature is seen after the second inoculation.



The patient to whom this chart refers was suffering from a septic compound fracture of the femur, and for about three weeks had had a septic type of temperature similar to that for the three days indicated in the chart previous to the inoculation.

Dosage of Vaccines.

Speaking generally, the aim of the vaccine therapist is to give the maximum dose which will not give rise to a general reaction in the patient. In the consideration of the dose which is to be administered to any particular patient there are several factors which have to be taken into account. In the first place, it is a general rule that the more severe the infection the smaller should be the dose of vaccine administered. This, on the face of it, does not seem to be unreasonable, as the patient who is suffering from an acute infection is absorbing much toxic bacterial substance from the focus of infection, and if a large dose of vaccine is administered on the top of this, then it may easily constitute an overdose, and it is in just such a case that an overdose is to be avoided. Secondly, the toxicity of the particular vaccine which is going to be administered has to be considered. Some vaccines can be given in large doses, even in acute cases, without the slightest reaction, whereas with others great care must be taken in feeling one's way, otherwise an alarming reaction may occur. Thus, with *Streptococcus pyogenes* in an acute case it is well to begin with not more than two million cocci, whereas with Bordet's bacillus of whooping-cough or with Pfeiffer's bacillus of influenza very large doses can be given even in acute cases with impunity. In connexion with the dosage of vaccine, therefore, we have to consider several different classes of cases:

1. Where the infection is a chronic one, and where even if there is a small flare up it will not seriously inconvenience the patient—for example, sycosis or furunculosis. Here the dose should be rapidly increased—and by a rapid increase I mean successive increments of 50 to 100 per cent.—until there is a very marked improvement or until there is evidence that a slight overdose has been given as evidenced by an exacerbation of the local condition or by some fever or malaise after the inoculation—that is, until there is a focal or a general reaction. When there is evidence of this overdose, then the next dose should be reduced to the last one which failed to produce any "reaction," and the subsequent increases should only be gradual. If there is marked improvement before any "reaction" is evident (as is very often the case), then the same dose which has induced the improvement should be repeated several times, as evidently something approaching the optimum dose for the particular patient has been found.

2. Where the infection is a chronic one, but where it is not safe to risk any considerable exacerbation of the condition

—for example, chronic bronchitis. Here the best procedure is to give a safe dose and to increase the dose only gradually. By this means improvement will be seen without any danger of upsetting the patient. A little time may be lost in finding the most suitable dose, but in such a case this is infinitely preferable to the risk of setting up an acute infection.

3. In acute infections where it is essential that no "reaction" should be induced—for example, broncho-pneumonia, erysipelas, etc. The same procedure should be adopted as in the preceding case, but the initial dose should be smaller (roughly one-quarter). In cases of this description it is wise to give very small doses and to repeat them often (every twenty-four or forty-eight hours if necessary). In all cases where with a certain dose there is definite improvement manifested, it is wise to repeat the same dose next time and possibly for several times. If, instead of doing this, the practitioner increases the dose according to a definite prearranged scale, then it is quite likely that he will rapidly increase the dose beyond the optimum and undo all the good which he has done with his first doses.

Here I should like to put in a word of caution to the practitioner against slavishly following the scale of doses which commonly accompany a vaccine from the laboratory. In many cases an autogenous vaccine is sent out from a laboratory in a series of ampoules, each ampoule containing a larger dose of the vaccine than its predecessor, and in many cases these doses are injected into the patient at intervals of a week or thereabouts without regard to the action of any one of them on the patient's condition. The scale of doses is given in all good faith by the bacteriologist, but it must be remembered that at the best this scale only represents the average dose and any individual may differ far from the average. It must be remembered, also, that in a great many laboratories, and especially in the commercial laboratories not attached to hospitals, the bacteriologist may have very little experience of the actual treatment of patients with vaccines, however skilful he may be at the isolation of bacteria and the preparation of vaccines. His opinion, therefore, as to the dosage of the vaccines is often taken only from what he has learnt from someone else, and it may be extremely fallacious.

A Successful Result with Vaccine Therapy.

When the microbes are exposed to the full effect of the antibacterial substances elaborated as a result of the injection of vaccine, then the result should be rapid and favourable. When, on the other hand, the microbes are enclosed in inflammatory tissue and in tissue where, as a result of the inflammation there is a greatly diminished blood and lymph supply, they will be partially sheltered from the antibacterial substances and the result will be much slower and less certain. Where the microbes are contained in some necrosed material such as a slough or sequestrum, it is unlikely that the antibacterial substances which may be produced will have any influence on the bacteria which are so hidden, although they may limit the infection and prevent its spread to the surrounding tissues.

It follows from this that in incipient infections a rapid success may be obtained, but where the infection is of old standing and the circulation through the infected focus has become impeded success will only be obtained after a long series of immunizing doses, while in cases where there are sloughs or collections of pus success with vaccines will only be obtained after the sloughs have been removed or the pus has been evacuated by surgical means.

When a vaccine is given for *prophylactic* purposes it is not to be expected that the immunity will be absolute. Even when an individual is highly immune he may receive such a large dose of a virulent organism that infection will result. It is doubtful whether a vaccine will ever be produced which will confer such immunity that the individual is resistant to the strongest infection. The vaccine will, however, confer immunity to a moderate infection, so that a disease like typhoid fever, instead of assuming epidemic proportions, will occur in an inoculated community only in a few individuals here and there who have either received an enormous infection or whose immunity may have been temporarily reduced by privation or other cause.

CLINICAL APPLICATION.

I now wish to discuss the vaccine treatment of some of the conditions which are common in general practice.

Catarrhal Infections of the Respiratory Tract.

I will commence with these first, because at this season of the year they are very much in evidence, and secondly, because in no conditions is the practitioner likely to achieve greater success with vaccines.

The bacteriology of the whole respiratory tract is roughly the same, and the three microbes which are most commonly in evidence in infections of this region are the pneumococcus, streptococcus, and Pfeiffer's bacillus of influenza. There are others, such as the *Micrococcus catarrhalis*, *Bacillus septus*, Friedländer's pneumonia bacillus and staphylococcus, which are at times found, but infections with these are not so common.

In all these catarrhal infections of the respiratory tract we must bear in mind that we are all constantly being exposed to infections with one or other of these microbes as the number of carriers is legion. It was shown during the war that when there was an epidemic of cerebro-spinal meningitis—which is caused by an organism which inhabits the respiratory passages—there were among the people of the infected camps a very large number of carriers. During the influenza epidemics it was shown that in some communities more than half the population were harbouring in their respiratory passages the pneumococcus and Pfeiffer's bacillus, while it is probable that nearly all of us constantly have pathogenic streptococci in the mouth and post-nasal spaces. It is evident, therefore, that every one is being very frequently brought into contact with these microbes which are responsible for the catarrhal conditions, and there is no doubt that we have all acquired a certain amount of immunity. It is common knowledge that individuals vary enormously in their susceptibility to these infections; some people hardly ever get colds, others are constantly picking them up.

When we examine these "colds" bacteriologically we find that while some individuals (and these are in the minority) get many "colds" which are always caused by the one microbe, others (the majority) are infected by one microbe at one time and by another at another time. The same is seen in many cases of chronic bronchitis. The flora is not constant, but one microbe may be there for a time and then it will disappear and its place will be taken by another. This varying flora makes the treatment of respiratory conditions more complicated, but it has had one good effect as regards the vaccine treatment by the practitioner, and that is that it has caused the mixed polyvalent vaccines to be introduced. For routine vaccine therapy practice where many patients have to be dealt with, and where there is not the opportunity of having extensive bacteriological investigations done on each patient, these polyvalent mixed vaccines have met with very great success.

When a sputum is sent to the laboratory from a case of chronic bronchitis, often there is found a very mixed flora, and it is extremely difficult to say which is the infecting organism and which of the organisms are merely growing saprophytically. In such cases better results are very often obtained with the mixed stock vaccines than can be got with autogenous vaccines. There is no doubt that in the period before the influenza epidemic, in very many cases of chronic bronchitis, Pfeiffer's bacillus was missed in the examination of the sputum; it is not very easy to see in a stained specimen of sputum, and the methods of cultivation were very indifferent, so that in very many cases autogenous vaccines were made which did not contain this, which was probably the most important part of the infection.

The Common Cold.—The mixed stock vaccine (0.2 c.cm.) should be given immediately the "cold" is noticed, and in a certain number of cases the attack will be aborted. Even when the cold has developed, the vaccine will generally cut short the attack, and especially the last stage, when there is a profuse muco-purulent discharge from the nose without constitutional symptoms. The vaccine also seems to prevent the infection spreading down to the bronchi. With the common cold, however, the chief value of the vaccine is in prophylaxis. In people who are susceptible to colds the anticatarrh vaccine should be given in the

autumn in three doses—0.25, 0.5 and 1 c.cm.—and during the winter monthly doses of 1 c.cm. may be given. It has been common experience that by this means people can be kept free from colds who, without the vaccine, were having one attack after another during the winter.

Bronchitis.—The bacteriology of bronchitis is roughly the same as that of the common cold, and very often the attack begins with a cold. If the infection is simple, an autogenous vaccine may be made, but usually the mixed stock vaccine does all that is necessary. Doses of from 0.25 to 1 c.cm. of the mixed vaccine for colds or of the anti-catarrh vaccine are given at intervals of from three to seven days, and after the first one or two doses the patient notices the improvement. The condition usually improves rapidly up to a point at which it gives little trouble to the patient, and when this stage has been reached, if larger doses are given monthly the infection gradually disappears.

Influenza.—By this term I mean the acute epidemic influenza and not the catarrhal conditions which are loosely called influenza by the public. During the recent epidemics vaccines have proved of very great benefit both in the prophylaxis and in the treatment of the complications of this disease. The primary cause of the infection is obscure. There are two schools: one holds that Pfeiffer's bacillus is the primary infection, and the other that the nature of the infection is yet unknown. There is not the slightest doubt, however, that Pfeiffer's bacillus, together with the pneumococcus and streptococcus, is responsible for the complications of the disease, and it is to them that the bronchopneumonia which caused the mortality was due. Exact figures as regards the influence of the vaccine on the epidemic were not easy to obtain, but a very interesting and important communication was published by Sir William Leishman, on the results in the military camps in England during the last wave of the epidemic, which showed that the incidence of the disease was reduced from 47.3 to 14.1 per 1,000 and the mortality from 2.25 to 0.12. Even allowing a very considerable margin of error, these figures are quite enough to prove that the vaccine was of enormous benefit in reducing the mortality. The vaccine which was used in these experiments was one which only contained a small dose of Pfeiffer's bacillus, and it has now been modified, so that it is more than likely that with the new vaccine the results would be even better than is shown by Sir William Leishman's figures. As regards the composition of the anti-influenza vaccine, there are many different combinations on the market containing varying proportions of the three microbes which are involved. Of these different vaccines, I think that the best combination is the one which we prepare at St. Mary's Hospital, which contains 500 million Pfeiffer's bacillus per cubic centimetre, with 1,000 million pneumococci and 100 million streptococci. The Ministry of Health vaccine contains a smaller dose, and especially a smaller dose of the pneumococcus, and is really a compromise between the old army formula and the St. Mary's Hospital formula. It has been shown, especially by Lister in South Africa, and by the American army authorities during the war, that very large doses of pneumococcus can be given with impunity and that better immunity followed these larger doses than was obtained with the smaller ones.

Treatment.—It has been the experience of many practitioners that small doses of one of the anti-influenza or anti-catarrh vaccines was of very great benefit in the treatment of the bronchitis and bronchopneumonia which followed influenza. Doses of about 0.1 c.cm. of the prophylactic vaccine were given immediately and repeated in twenty-four hours if the temperature still remained high.

Pneumonia.

During recent years great advances have been made in the treatment, and more especially the prophylaxis, of pneumonia by means of vaccines.

In 1913 Sir Almroth Wright published results showing that among the natives employed on the mines in South Africa the administration of vaccines had a very definite effect in reducing the incidence of and mortality from lobar pneumonia. He also showed that vaccine given in the incubation period not infrequently aborted the attack—this latter observation proving that the administration of pneumococcus vaccine was not followed by any prolonged negative phase such as sometimes follows typhoid vaccination. At the time that Sir Almroth Wright's observations were made it was not appreciated that pneumococci differed among themselves as regards their antigenic properties, but soon after it was shown by Dochez and Gillespie that pneumococci could, by immunological methods, be split up into several groups more or less definite. These observers found that there were three definite groups of pneumococci, and besides these there were a number of cocci which did not fall into these groups, and these they made a conglomerate group which they designated Group 4. It was shown that a vaccine of a pneumococcus of Group 1 would protect against an infection of Group 1 but not against the other groups; Group 2 vaccine would protect against Group 2 but not against Group 1, and so on. Lister, who continued Sir Almroth Wright's work in South Africa, ascertained which were the common types of pneumococci causing pneumonia on the Rand, and he prepared a mixed stock vaccine containing all the types, which he administered to the natives in large doses with wonderful effects as regards the prevention of the disease. The table given below, which is taken from Lister's work, refers to the incidence and mortality of pneumonia on one of the large mining compounds where there was a native population of something like 15,000 men, and it will be seen that whereas the incidence

Table showing the Pneumonia Returns of one of the South African Mines for the Years 1908 to 1913, also for the Experimental Period from November, 1916, to October, 1917, inclusive.

Year.	Incidence per 1,000.	Mortality per 1,000.
1908	70.71	14.17
1909	101.85	17.97
1910	153.54	28.97
1911	128.98	26.94
*1912	67.68	19.96
*1913	31.75	4.80
†1914	—	—
†1915	—	—
Experimental period, November, 1916, to October, 1917	4.67	0.86

* During these years the inoculations were carried out in accordance with the principles advocated by Sir Almroth Wright and his associates.
† No record on account of war conditions.

of pneumonia before vaccine therapy was instituted was 70 or more per 1,000, it dropped during the year when Lister was giving his vaccine consisting of mixed types of pneumococci to about 4 per 1,000. The effect on the mortality from the disease was even more striking, as this dropped from about 20 per 1,000 to 0.86. There can be no question from these figures that pneumococcus vaccine is of extreme value as a prophylactic, and if further evidence was required it is furnished in the various reports from the camps of the United States army during the war. Pneumonia was one of the great scourges of the American camps, but by the use of vaccines the incidence and mortality from this disease was much reduced.

As regards the treatment of lobar pneumonia with vaccines it is much less easy to obtain reliable figures owing to the great variations which are observed normally in the course of the disease. Wright's observation that the disease can be prevented by inoculation during the incubation period shows that large doses of the vaccine can be given with safety and without producing a negative phase, and a number of reports have been published showing that the administration of vaccine shortened the disease and hastened the crisis. It must be remembered, however, that when the lung is consolidated there is a very large amount of tissue swarming with pneumococci through which the circulation is greatly impeded, so that even if a certain amount of immunity is produced the immune bodies will have difficulty in obtaining access to the seat of infection. There seems to be no doubt that the administration of vaccine aids the resolution of the pneumonia and hastens recovery.

Whooping-cough.

This disease is caused by Bordet's bacillus, but very soon after the onset there appear, just as we see in influenza, Pfeiffer's bacillus and pneumococcus. For the treatment of the disease, therefore, a mixed vaccine should be given. The technical difficulties of isolating Bordet's bacillus make it almost imperative in practice to use a stock vaccine, and such a vaccine should contain all three of the bacteria mentioned above. This vaccine is very little toxic, so that even for small children comparatively large doses (1,000 or 2,000 million) can be given, and it is well to repeat the doses every two or three days instead of at the longer periods which are common with the other vaccines.

The administration of the vaccine cuts short the attack and prevents complications.

It is for prophylactic purposes that the whooping-cough vaccine will be found of greatest value to the community. Either a simple vaccine of Bordet's bacillus may be given or a mixed vaccine of this bacillus combined with Pfeiffer's bacillus and pneumococcus. Three doses of the vaccine should be given at intervals of a week, and it has been found that in some communities of children whooping-cough has been almost wiped out by this means. I should strongly advocate prophylactic vaccination in institutions where there are aggregated together numbers of children, and also in families where one of the children has become infected.

Chronic Rheumatic Conditions.

I include under this heading rheumatoid arthritis, fibrositis, neuritis, sciatica, myositis and similar complaints. These all seem to take their origin from some chronic infection, which is usually streptococcal. The site of the infection is usually in the mouth or the intestine, and the streptococcus which is responsible is very different from the *Streptococcus pyogenes*, which is the causative agent in acute septic infections such as erysipelas or acute septicaemia; it is of very much less virulence, so that it may infect a portion of the body for years without causing more than slight inconvenience. It is because of this that infections of this type are allowed to persist, maybe, for many years, and it is often only when some serious result, such as rheumatoid arthritis, is seen that any attention is paid to the original infection. A common history of a patient with rheumatoid arthritis when she comes to the out-patient department is that she had bad teeth for years, and when she consulted her doctor she was told to have all her teeth out. This was followed by only temporary improvement, after which the arthritis progressed as before. On examination of such a patient's stools, it will in all probability be found that there is an enormous preponderance of streptococci, and more especially of streptococci of the mouth type. Doubtless the infection commenced in the mouth, but some of the streptococci which were being continually swallowed escaped destruction by the gastric juice and bile and established themselves in the intestine, where they had continued to flourish.

The effect in such cases of the administration of vaccines, either autogenous or stock, has been that in almost all there is some alleviation of the condition, and in some there is apparently complete disappearance of the disease. In some few there is apparently no benefit, which is not surprising considering the difficulty in isolating the organisms from the intestine and the multiplicity of types of streptococci found there. Considering, also, that the source of the streptococci is the intestine, which is to all intents and purposes outside the body, it must be appreciated that the course of vaccine treatment must be long, and it is seldom that recovery will take place in less than a year. Owing to the multiplicity of types of streptococci in the mouth and intestine it is frequently better to commence treatment with a mixed stock vaccine such as the anti-rheumatic vaccine which we make at St. Mary's Hospital and which contains a very large number of strains of streptococci from rheumatic patients, and only to proceed with an autogenous vaccine if the stock vaccine fails. If this is done, only comparatively seldom will an autogenous vaccine be required.

Diphtheria Carriers.

Brownlie (*Lancet*, March 27th, 1920) showed that by the administration of a vaccine the diphtheria bacilli could be got rid of in a very much shorter time than by any other means. Out of a series of 50 consecutive and unselected cases who received the vaccine in doses of 10 to 60 millions every four days 44 were free from bacilli after three doses, and all were free after eight doses of the vaccine. If these observations are confirmed it would seem that for public health purposes this vaccine of the diphtheria bacillus would be of the greatest value.

Other Conditions Suitable for Vaccine Treatment.

Vaccine therapy is applicable to very many conditions other than those on which I have touched, but time prevents my going into these. Local tubercle, acne, staphylococcal infections such as boils and carbuncles, streptococcal infections such as erysipelas or pyorrhoea, and many others have been successfully treated, and indeed vaccine therapy in these conditions seems to furnish the only direct means of combating the infection. Many publications have been made on these matters, and I need not weary you with recital of the merits of vaccines in these conditions which have been treated in this way for many years.

In conclusion, I wish to draw attention to the fact that patients may be inoculated with bacterial products not only from without, but also introduced into their circulation by some disturbance of the infected focus. It has been shown by means of blood examinations that any such disturbance is followed by a sequence of events which are the exact counterpart of those following the administration of vaccines by hypodermic injection.

It does not matter what form the disturbance takes—whether exercise, massage, forcible movement or the active hyperaemia induced by the application of a fomentation—the result is the same, the only difference being that, whereas the light forms of disturbance reproduce the effect of a small dose of vaccine, the more severe disturbances may be followed by the same events which follow a large dose of vaccine, and to which I have alluded above under the heading of "General Reaction"—namely, malaise, fever, or even collapse.

It follows from this that in the treatment of any patient by vaccines a satisfactory conclusion is only to be arrived at if this phenomenon of auto-inoculation is considered, and in most cases it is necessary that these auto-inoculations should be diminished or abolished by keeping the infected part as much as possible at rest by splinting or some other means.

In some conditions, such as phthisis, it is very difficult to control these auto-inoculations, and it is probable that the very indifferent results which have followed the administration of tuberculin in this condition in many cases have been due to this fact.

THE SEROLOGICAL CHARACTERS OF DISEASE-PRODUCING PNEUMOCOCCI.

BY

RICHARD R. ARMSTRONG, M.D., M.R.C.P.,

ERNEST HART MEMORIAL SCHOLAR, BRITISH MEDICAL ASSOCIATION (1919–1920).

(From the Bacteriological Department, St. Bartholomew's Hospital.)

RECENT investigations on several groups of micro-organisms, of which the meningococcus group may serve as an example, have proved the value of discrimination between disease-producing strains on the one hand and non-pathogenic saprophytes on the other. Such discrimination has been rendered possible by the general method of testing the agglutination reaction of a particular strain against specific serums, previously prepared by inoculation of rabbits with typical organisms from morbid lesions. By this means disease-producing micro-organisms have been gradually relegated to types.

The diversity of the clinical picture presented by pneumococcal pneumonia, the wide prevalence and severity of this disease, and the fact that the pneumococcus is a normal and usually harmless inhabitant of the upper respiratory passages, has suggested that distinct disease-producing types of the organism may exist.

Such has been shown to be the case by American workers at the Rockefeller Institute for Medical Research,[1]

who have defined at least three serologically distinct types to which the great majority of pneumococci isolated from actual cases of pneumonia were found to belong; a number of strains from indifferent sources, such as saliva or nasal secretion, could not be grouped by the type serums.

Application of the American results to pneumonias occurring in this country was at once suggested, but having regard to our widely different climatic and social conditions, it did not seem sufficient to limit investigation to the typing of pneumococci by means of serums obtained from American sources only.

It was held that insufficient evidence of the relative prevalence of the three recognized American types in this country was available, nor was there proof that other types of pneumococcus, as fertile originators of disease as any recognized in America, might not exist here. Further, it was considered inconvenient that the serological test should depend on the availability of serums derived exclusively from American sources. The preparation at first hand of type-agglutinating serums appeared expedient therefore, both from the standpoint of excluding the necessity for importing supplies, and also in order to obtain agglutinating serums prepared against strains of pneumococci derived from home sources. Experiments have been carried out with these objectives in view, and the results obtained will be considered under two headings:

I. The serological characters of pneumococci isolated from a variety of cases of pneumococcal infection not only of the lungs, but of the respiratory tract in general.

II. The preparation of agglutinating serums by the inoculation of rabbits with pneumococci derived from British sources.

I.—Serological Characters of Pathogenic Pneumococci.

1. *Identification of the Pneumococcus.*

The identification of each strain of pneumococcus prior to investigation by the serological test has been based on the characters described below—namely:

1. Habitat. The source—for example, sputum or lung juice; or heart's blood culture in a fatal case of pneumonia.
2. The very characteristic appearance of colonies on solid media. These are ringed or discoid in shape, and have an appearance resembling ground glass.
3. Pneumococci, particularly of pathogenic strains, show extraordinary predilection for media enriched with fresh blood. Although the addition of other body fluids (ascitic, etc.) will promote growth, the haemophilic character of the pneumococcus appears characteristic, and herein the organism differs from streptococci; the size of streptococcus colonies does not appear to be quite so much affected by the presence of blood.
4. Uniform turbidity in blood broth and ascitic broth; relative absence of chains.
5. The shape of the pneumococcus is usually a valuable guide; the presence of a capsule when growing in material obtained from body fluids is of important diagnostic value.
6. Mair's modification of the bile-solubility test has been employed.[2]

One-tenth of a cubic centimetre of a 10 per cent. solution of sodium desoxycholate is added to a twenty-four-hours old culture in 4½ c.cm. of sugar-free broth enriched by the addition of half a cubic centimetre of ascitic fluid.

If a pneumococcus be present, the turbid culture almost immediately clarifies; on the other hand, control tests with similar cultures of *Streptococcus pyogenes*, *salivarius*, and *faecalis* are absolutely negative.

2. *The Serological Test.*

An epitome of the procedure employed in carrying out the serological test follows:

Technique.

A. *Preparation of the Standard Emulsion.*

1. Single colony subcultures are made from first cultures of the material under investigation on—
2. Surface plates of legumin agar containing incorporated fresh human or rabbit's blood.
3. Plates are incubated at 37° C. overnight.
4. The growth is washed off in normal saline solution.
5. The suspension thus obtained is heated to 65° for half an hour.
6. Standardized to required strength—for example, 4,000 million cocci per cubic centimetre—and phenolated by the addition of 5 per cent. phenol solution requisite to produce a final concentration of 0.5 per cent. phenol.

B. *Agglutination.*

1. Small glass tubes 3 in. by ½ in. are arranged in racks for incubation at 55° C.
2. Required—control normal rabbit's serum, the three type serums, and suspensions of the three type cocci.
3. Dilutions of 1 in 10, 1 in 20, 1 in 40, 1 in 80 of serum, of each 0.5 c.cm. Add an equal amount of suspension to all tubes and incubate.
4. In marked cases results are easily readable within four hours, but as a routine twenty-four hours are given.
5. Agglutination when positive is generally complete in the case of typical specimens. Any supersensitiveness of coccal suspension to serum is betrayed by the control with normal serum.

For brevity and clearness results have been expressed as far as possible in the table on page 261, which summarizes the clinical features of each case, records the source from which coccus was derived, whether sputum, etc., during life or material obtained *post mortem*. The appearance of films of such material and of the primary cultures therefrom is noted, and also the serological type to which cultures from a selected single colony were found to belong.

The table of experimental results, giving the titre of each serum against the coccus examined, submitted in the full communication to the Science Committee of the British Medical Association, has been omitted from consideration of space.

It will be noted that dependence has been placed throughout on the isolation of the presumptive infecting strain of pneumococcus from sputum by culture methods. The alternative method of injection of sputum into the peritoneal cavity of a mouse and isolation of pathogenic strains by this means has not been employed, partly because it is felt that facilities for animal inoculation in this country are to a considerable extent restricted, and partly in order to ascertain how far sputal flora are representative of lung infections. That the sputum of cases of adult lobar pneumonia who acquire a massive infection of the lung is truly representative there can be no doubt; some uncertainty arises in the case of children, whose sputum, both in film and culture, differs very markedly from lobar sputum, most commonly showing a mixed flora, though usually containing pneumococci in excess. Coughing may always be induced, and a little sputum can thus be obtained, by swabbing the throat just above the upper opening of the larynx of a child suffering from broncho-pneumonia.

Certain inferences appear justified from a study of the results recorded in the table.

1. The American type pneumococci are responsible for disease in this country and have a similar distribution.

2. Seeing that the Type I coccus is responsible for many typical cases of lobar pneumonia in adults, and that this infection must be widely distributed, it is remarkable that this type does not appear to cause disease in childhood. So far, the pneumococci responsible for disease in young children have been found to belong almost uniformly to Type II.

In four cases of bronchopneumonia examined *post mortem* a Type II coccus was obtained from the lungs, in the remaining eight cases from the sputum during life. From present observations it would seem that this type of coccus most frequently causes illness in children, as it has also been obtained from undoubted tissue sources—for example, empyemata or the meninges and heart's blood *post mortem*. At the same time the need for a confirmatory study of lung puncture fluid is indicated, while the sputum of normal healthy children may also repay investigation, particularly if it is found that type pneumococci are absent or relatively absent therefrom.

The passage of Type I infection from mother to child is exemplified by Cases G. and H., in which a boy, aged 12 years, developed a typical lobar pneumonia with crisis a week after his mother fell ill, her pneumonia being complicated by an empyema. On the other hand, in Cases E. and Z., a father and his son aged 4 were admitted to hospital simultaneously suffering from lobar- and broncho-pneumonia respectively. A Type I coccus was isolated from the sputum of the father, a Type II from that of the child; this finding does not suggest a case-to-case infection.

In only one case, AJ., a girl aged 6 years, with empyema, has a Type I coccus been isolated from a child.

It would seem that a very different kind of susceptibility to the two types must exist in the case of children and adults, and the observed difference in the clinical aspect of pneumococcal lobar- and broncho-pneumonia is thus confirmed by the serological findings. So far as the writer is concerned this result was not anticipated.

Types of Pneumococci Occurring in Acute Infections of the Respiratory Tract.

Clinical and Serological Type.	Case Reference.	Age: Years.	Source.	Film or Culture.
LOBAR PNEUMONIA.	A.	Adult	Sputum	Dominant pneumococcus.
A.-H., Type I.	B.	"	Empyema, pus	Pneumococcus.
I.-O., Type II.	C.	"	Sputum	Dom'nt pneumococcus.
P., Non-agglutinator.	D.	"	"	Dom'nt pneumococcus.
	E.	"	"	Dom'nt pneumococcus.
	F.	"	"	Dom'nt pneumococcus.
	G.	"	Empyema, pus	Pneumococcus.
	H.	12	Sputum	Dom'nt pneumococcus.
	I.	Adult	Pleural exudate *post mortem*	Pneumococcus.
	J.	"	Heart's blood *post mortem*	Pneumococcus.
	K.	"	Sputum	*B. influenzae*, dom'nt pneumococcus.
	[1]L.	"	"	Pure culture pneumococcus.
	M.	"	"	Dom'nt pneumococcus.
	N.	"	Empyema, pus	Pneumococcus.
	O.	"	Sputum	Dom'nt pneumococcus.
	P.	"	"	Dom'nt pneumococcus.
BRONCHOPNEUMONIA.	Q.	Adult	Sputum	Friedländer's bacillus, pneumococcus.
Q., Non-agglutinator.	[2]R	"	Bronchial secretion *post mortem*	Dom'nt pneumococcus.
R.-AE., Type II.	S.	Child	Bronchial secretion *post mortem*.	Dom'nt pneumococcus.
	T.	"	Empyema, pus *post mortem*	Pneumococcus.
	U.	"	Lung puncture fluid	Dom'nt pneumococcus, streptococcus, *B. catarrhalis*.
	V.	7 wks.	Sputum	Dom'nt pneumococcus.
	W.	8 mos.	"	Dom'nt pneumococcus.
	X.	2½	"	Dom'nt pneumococcus.
	Y.	1½	"	Dom'nt pneumococcus.
	Z.	4	"	Mixed flora, including pneumococci.
	AA.	3½	"	Pure growth pneumococci.
BRONCHOPNEUMONIA.	[3]AB.	3	Sputum	*B. diphtheriae*, pneumococcus
	AC.	2	"	Dom'nt pneumococcus
	AD.	6	"	Mixed flora
	AE.	3½	"	Dom'nt pneumococcus
BRONCHITIS.	AF.	Adult	Sputum	Dom'nt pneumococcus
AF.-AH., Type II	AG.	"	"	Dom'nt pneumococcus
	AH.	"	"	Dom'nt pneumococcus
EMPYEMA.	AI.	Adult	Pus	Pneumococcus
AI., AJ., Type I	AJ.	6	"	"
AK.-AM., TypeII	AK.	Adult	Pus *post mortem*	"
	AL.	6	Pus	"
	AM.	6	"	"
SEPTICAEMIA.	[4]AN.	Child	Heart's blood *post mortem*	Pneumococcus
AN., Type III	[5]AO.	1½	Pericardial fluid	"
AO., AP., Type II	[6]AP.	1½	Heart's blood *post mortem*	"
MENINGITIS.	AQ.	12	Pus *post mortem*	Pneumococcus
AQ.-AT., Type II	AR.	12	"	"
	AS.	7	Lung juice *post mortem*	"
	AT.	Adult	Pus *post mortem*	"
PERITONITIS.	AU.	Adult	Heart's blood *post mortem*	Pneumococcus
AU., Type I				
UPPER RESPIRATORY PASSAGES: RHINITIS, etc.	AV.	Adult	Nasal discharge	Dom'nt pneumococcus
	AW.	"	"	Dom'nt pneumococcus
AV.-BB., Type II	AX.	"	"	Dom'nt pneumococcus
BC., Non-agglutinator	AY.	"	Post-nasal space secretion	Dom'nt pneumococcus
	AZ.	"	Pharynx	Pure pneumococcus
	BB.	Child	Nasal discharge	Dom'nt pneumococcus
	BC.	Adult	Empyema ethmoidalis pus	Pure pneumococcus

[1] Complicated by morbus cordis.
[2] Complicated by mitral stenosis.
[3] Post-diphtheritic bronchopneumonia.
[4] Primary focus, mastoid disease.
[5] General tuberculosis, terminal pneumonia.
[6] Pyopericarditis.

3. Of the other types, as already shown by American workers, Type III has a limited distribution in the upper respiratory tract in disease; it is interesting that the only specimen was derived from a mastoid abscess with pneumococcal meningitis.

4. Certain pneumococci, which there seemed every reason to believe responsible for a particular illness, did not agglutinate with the three type serums. These may possibly be referable to the heterogeneous Group IV.

Mair's modification of the bile solubility test has proved of very great value in separating off a few cocci morphologically resembling pneumococci and with similar cultural characters, but belonging to the group of salivary streptococci and on other grounds not to be regarded as belonging to the pneumococcus group.

In addition, organisms resembling pneumococci have been isolated from time to time which appear to be non-specific, although bile-soluble. Such are often exceedingly hard to emulsify from plate cultures for the purpose of testing their agglutinating properties; the explanation of this physical peculiarity is not fully understood. More than sixty strains of pneumococci have been investigated in the course of the inquiry.

II.—PREPARATION OF AGGLUTINATING SERUMS BY INOCULATION OF PNEUMOCOCCI DERIVED FROM ENGLISH SOURCES.

Living cultures of the only Type III coccus obtained (Case AN.) were unfortunately not kept, and an American Type III coccus—a stock culture obtained from Dr. St. John Brook, Lister Institute—was utilized for the preparation of an agglutinating serum, a serum of good titre and keeping qualities being obtained from the first rabbit inoculated.

The stock Type I coccus from Dr. St. John Brook had but feeble agglutinogenic properties, but a satisfactory coccus "A" from a typical case of lobar pneumonia here has yielded good agglutinating serum. The preparation of a good Type II serum has presented very great difficulty, and caused delay and disappointment throughout the inquiry.

Of the Type II cocci investigated all are so far possessed of but feeble agglutinogenic power. Further, the wide distribution of the Type II coccus, and the variety of conditions to which pneumococci of this group give rise demands the production of a "catholic" serum of wide agglutinating scope.

Such a discovery might have been anticipated from the admittedly complex character of the Type II group. The difficulty of producing a Type II immune serum from horses has been recognized.

The principle adopted in the preparation of agglutinating serums has been the intravenous injection of standard phenolated suspensions of the selected coccus in increasing doses at intervals of forty-eight hours, and throughout only a single strain has been employed for each rabbit.

By this means satisfactory serums possessed of the property of completely agglutinating their homologous coccus, and subsequently other cocci belonging to the same group in dilutions of 1 in 80 in twenty-four hours

TABLE A.

Suspension.	Normal Serum.				"M." Serum.				"A.L." Serum.				"A.O." Serum.				"T." Serum.			
	1:20	1:40	1:80	1:160	1:20	1:40	1:80	1:160	1:20	1:40	1:80	1:160	1:20	1:40	1:80	1:160	1:20	1:40	1:80	1:160
"A.," T.I., control ...	–	–	–	–	–	–	–	–	–	–	–	–	(+)	(+)	–	–	–	–	–	–
U.S.A. III control ...	–	–	–	–	+	(+)	–	–	+	(+)	–	–	++	++	+	(+)	+	–	–	–
"A.L."	–	–	–	–	+	+	+	–	++	+	+	tr	+	+	+	(+)	++	+	+	+
"A.O."	–	–	–	–	(+)	(+)	tr	–	+	(+)	tr	–	+	+	+	(+)	+	–	–	–
"J."	–	–	–	–	+	+	(+)	(+)	+	+	(+)	–	+	+	+	+	+	+	+	+
"M."	–	–	–	–	+	+	(+)		+	(+)	tr	tr	–	–	–	–	–	–	–	–

at 55° C., were obtained in the case of a Type 1 strain derived from a case of typical lobar pneumonia referred to as Type I "A" and in that of the American Type III coccus from the Lister Institute.

An example of the procedure followed when preparing a rabbit, and the result, at intervals, given by its serum, may be quoted.

A young animal weighing 1,300 grams was inoculated intravenously, at intervals varying from forty-eight to seventy-two hours, with five successive doses of an emulsion in 0.5 per cent. phenolated normal saline solution, increasing from 4,000 to 16,000 million Type I "A" coccus.

On the twelfth day from the beginning of the experiment a sample of the animal's serum was titrated against a standard emulsion of the homologous coccus. Complete agglutination in twenty-four hours at 55° C. occurred in dilution 1 in 10, distinct agglutination in dilution 1 in 20, a trace in 1 in 40

Two further injections were given, the dose rising to 20,000 million cocci. A test of the agglutinating power of the serum six days later showed complete agglutination in dilution 1 in 40, slight in 1 in 80.

Doses of 16,000 million and 20,000 million cocci were repeated, and the animal, which had gained weight throughout the experiment, was finally bled out, exactly a month from the date of first inoculation. The final titration of the serum showed complete agglutination in 1 in 80, slight agglutination in 1 in 160.

The American Type II coccus proved a failure for agglutinogenic purposes, and recourse was had to a series of Type II cocci from definite tissue sources in cases of pneumococcal infection—for example, heart's blood, empyema pus, or lung exudate *post mortem*. These cocci were referred to type by titration against an American Type II serum prepared by the Mulford Company, Philadelphia. The strains employed are derived from the cases whose cipher they bear; the clinical features of each are noted in the table on p. 261.

The Case "I" Type II serum at first feebly agglutinated American Type II coccus, but, on keeping, this action became limited to its homologous coccus.

Case "M" and Case "J" cocci were next tried but without success, the titre attained by the Case "J" serum after sixteen injections over a period of six weeks being only 1 in 10.

It was thought that the animals employed might be in themselves poor agglutinin producers, but a result similar to the above was again obtained after repeated injection. In view of this lack of success the effect of *unheated* emulsion of cocci killed by the addition of 0.5 per cent. phenol and incubation at 37° was next tried, a rapid method of five injections at intervals of forty-eight hours being employed and the animal then bled out.

The titres of the two serums obtained were respectively:

	1:10	1:20	1:40	1:80
Case AL.	++	++	+	(+)
Case M.	+	+	(+)	–

++ = Complete agglutination, clear fluid.
\+ = Distinct agglutination, fluid not clear.
(+) = Slight agglutination.
tr = Trace only.

Encouraged by the improved titre of the "AL." serum, two other rabbits were inoculated with the Case "AO." and Case "J." cocci, as before unheated but killed by phenol.

A sample of the blood of each rabbit taken from the ear prior to bleeding out yielded a serum with the following titre in twenty-four hours:

	1:10	1:20	1:40	1:80
Case J.	++	++	++	++
Case AO.	++	++	++	++

Three days later each of the four serums was titrated against its homologous coccus and the other cocci of the group, with the result shown in Table A. Some doubt was felt as to the accuracy of the readings owing to the fact that somewhat indifferent suspensions of cocci with tendency to auto-precipitation were employed and the experiment was therefore repeated a fortnight later, with the following result:

TABLE B.

Coccus.	T.			AL.			AO.			M.		
	1:10	1:20	1:40	1:10	1:20	1:40	1:10	1:20	1:40	1:10	1:20	1:40
J. ...	(+)	+	tr	(+)	–	–	–	(+)	tr	–	–	–
AL. ...	–	–	–	(+)	(+)	–	(+)	+	–	–	–	–
AO. ...	–	–	–	–	–	–	++	+	–	–	–	–
M. ...	–	–	–	(+)	–	–	–	–	–	(+)	–	–
A. ...	(+)	tr	–	–	–	–	–	–	–	–	–	–

No agglutination with normal serum control.

Rapid deterioration of all serums had obviously occurred, the reason for which has not yet been clearly defined; these serums were necessarily discounted and two more rabbits prepared against the AL. and M. cocci.

The AL. serum agglutinated its homologous coccus in dilution 1 in 20, and was thereupon tested against a group of cocci previously typed by the Mulford II serum to confirm the reactions of this serum. The result, Table C, indicated that the AL. serum was not only a feeble agglutinator, but insufficiently "catholic" as regards the Type II group.

TABLE C.

Type II Cocci.	AL. Serum.		Normal Serum.	Type II Cocci.	AL. Serum.		Normal Serum.
	1:10	1:20	1:10		1:10	1:20	1:10
AL. ...	+	(+)	–	AA.	(+)	(+)	tr
AY. ...	(+)	–	–	AB.	+	(+)	tr
Y. ...	–	–	–	AM.	(+)	tr	+*
Z. ...	+	+	+*	"B," Type I	–	–	–†

* Poor suspension. † Control.

Meanwhile it was necessary to identify the type of a number of cocci which had been collected. A small quantity of Type II serum from the Rockefeller Institute became available from the pathological department, Charing Cross Hospital, and was tested against standard emulsions to ascertain its agglutinating properties. The serum proved so active that it agglutinated not only selected Type II cocci in all dilutions up to 1 in 80, but also reacted with a Type I and Type III coccus in dilutions of 1 in 10 and 1 in 20.

This cross-agglutination was found to be eliminated by using the serum in higher dilutions only. Finally, the serum was employed with satisfactory results in dilutions of 1 in 40, 1 in 80, and 1 in 160.

The problem presented by the preparation of a Type II serum cannot at present be considered solved. There remains to discover by repeated trial a Type II coccus of good agglutinogenic power and thoroughly representative of the group. Or, failing this, to investigate further the conditions which determine the production of agglutinins against the pneumococcus in the rabbit and lead to deterioration of agglutinin in serums when kept.

In conclusion, it may be said that the Type I pneumococcus is the most clear-cut and important of all. It is responsible for many of the severest cases here, while

American investigators have shown that Type I therapeutic serum has an appreciable effect in reducing mortality from lobar pneumonia; the serums prepared from Types II and III being up to the present far less successful.

In view of this practical aspect of the observations recorded in this report, it was necessary to determine whether the English strains of Type I cocci, identical with the American type on simple agglutination, are also indistinguishable when submitted to what is perhaps the most specific test available, the *absorption of agglutinin*.

The cocci compared in this respect were Type I American, English Type I "A," Type I "B" with Type II "M" as control. The serum used was the Type I "A," prepared as described.

The experimental procedure was as follows:

1 c.cm. of dilution 1 in 5 "A" serum was put up against equal amounts of suspensions containing 4,000 million per c.cm. of each of the above cocci.

Conditions.—Two hours in the water-bath at 37° C. Tubes then centrifuged and the supernatant fluid titrated against the Type I "A" coccus homologous to the serum.

Absorption Experiment.—Type I "A" serum absorbed with Type I "A" coccus, Type I, U.S.A. coccus, Type I "B" coccus, Type II "M" (control) coccus.

Result after Saturation V, Type I Coccus "A."

	Dilutions.			
	1 : 20	1 : 40	1 : 80	1 : 160
Control saline...	++	++	++	(+)
Control Type II "M"	++	++	++	(+)
Serum saturated with Type I "A"	+	(+)	–	–
Type I, U.S.A....	+	(+)	–	–
Type I "B"	+	(+)	–	–

Thus while Type II "M" completely failed to reduce the Type I agglutinin, the Type I cocci all caused its reduction by about three-quarters as shown in the accompanying table. In view of this result, there is no room for doubt that the two specimens of Type I coccus isolated from cases of typical lobar pneumonia in this country are identical with the stock specimen of Type I coccus obtained from America.

With a view to preparing Type I serum for therapeutic use, cultures of the organisms isolated from English cases have been forwarded to Dr. E. G. Murray, who is working at the Field Laboratories, Cambridge, on behalf of the Medical Research Council, at the production of therapeutic serum.

Throughout the inquiry I have been constantly indebted to the active assistance, encouragement, and advice of Dr. Mervyn H. Gordon, bacteriologist to St. Bartholomew's Hospital, and of his assistant, Mr. T. Heggerty, to both of whom I express my grateful thanks.

REFERENCES.

[1] Rockefeller Institute for Medical Research, Monograph No. 7: Avery, Chickering, Cole, and Dochez, *Acute Lobar Pneumonia, Prevention and Serum Treatment*, 1917. [2] W. Mair, A Contribution to the Serological Classification of the Bile-Soluble Diplococci, *Journal of Pathology*, xxi, 1917.

EXOMPHALOS, OR HERNIA INTO THE UMBILICAL CORD.

BY

ROBERT TENNENT, M.B., CH.B.GLAS., F.R.C.S.ED.,

ASSISTANT SURGEON, ROYAL HOSPITAL FOR SICK CHILDREN, AND JUNIOR ASSISTANT SURGEON, VICTORIA INFIRMARY, GLASGOW.

THE condition of exomphalos, although somewhat rare, is of considerable interest, both from the point of view of origin and that of treatment.

It may present an abnormality of such extreme degree that the greater part of the abdominal organs are contained in a sac at the umbilical attachment of the cord or near that situation; but more commonly it consists of a globular swelling of about the size of a Tangerine orange. The former extreme cases are beyond surgical aid, but the more moderate degrees are eminently suitable for operation. The literature, although fairly copious, contains few accounts of successful surgical treatment, the reason generally being that the cases were seen, or the operation performed, too late, when either infection or obstruction with gangrene of the contents of the sac had taken place. The appended cases, illustrative of the success of immediate operation, occurred in Mr. MacLennan's wards at the Royal Hospital for Sick Children, Glasgow.

Definition.—Exomphalos has been defined by Ballantyne[1] as a true hernia of abdominal contents into the umbilical cord. It is distinct, he says, from the deformity associated with a greater defect in the abdominal wall than merely in the neighbourhood of the attachment of the cord. To this condition he gives the name gastroschisis. A less pronounced form of this abnormality has been described by Nicaise as "amniotic umbilicus," and consists of a deficiency of skin around the umbilicus, the deficient space being covered by amnion from the cord. In a recent article Friend[2] describes a case of exomphalos and prefers the name of amniotic hernia, quoting Moschcowitz[3] in support of the view that the term "hernia into the cord" is a misnomer. The undermentioned cases have all been clearly of the nature of hernia into the substance of the cord, and conform to Ballantyne's definition. Accepting this definition, it might at first appear that all cases of exomphalos would be amenable to early treatment, whereas cases of gastroschisis are beyond relief. This, however, is not so, for some of those hernias, although having but a narrow communication with the abdominal cavity, have nevertheless contained such proportions of the abdominal, and even thoracic, organs as to render replacement impossible.

Frequency.—Exomphalos is estimated by various authors to occur in from 1 in 2,000 births to 1 in 6,000 births.

Clinical Characteristics.—The abnormality usually takes the form of a globular, asymmetrical swelling situated at the abdominal attachment of the cord and extending into its substance. Sometimes there is a constriction between the swelling and the abdomen. In such a case a serious accident might happen, as in the case described by Victor Bonney,[4] and quoted by Friend,[2] where the practitioner removed the hernial sac and its intestinal contents, consisting of small intestine, during the process of ligature and division of the cord at birth. In size it varies from a walnut to a large apple, but is commonly of an intermediate size. The coverings of a light grey colour are often quite transparent, and admit of inspection of the contents of the sac. In other cases the colour is darker and the sac opaque. The covering consists of three layers, namely, amnion, Wharton's jelly, and peritoneum, the former two constituents tapering at the summit of the swelling and passing along the cord. Occasionally the skin of the abdominal wall is continued some distance on to the swelling and forms a funnel-like cup into which the swelling fits. The swelling contains usually some part of the intestinal tract and—as would be expected—not infrequently a Meckel's diverticulum. In two of the cases the caecum and appendix were found in the sac, and in both the caecum had a well-marked mesentery. Rarely can the contents be reduced into the abdomen, and more often there is obstruction to the passage of bowel contents or even a complete strangulation of bowel. If treatment is delayed one of two conditions speedily causes the death of the child: It succumbs to intestinal obstruction, or the covering membranes are torn or slough off and peritonitis ends the case.

Treatment.

Operation at the earliest possible moment after birth is the only successful method. This statement is apparently at variance with some textbook teaching on the subject. One author[5] states:

> "Possibly in some of these less pronounced cases a radical operation may with safety be undertaken, especially if the infant has reached a few months of age."

And again:

> "In certain favourable cases, where the child attains an age which will render operation justifiable, say six months or more, removal of the sac wall and suture of the edges of the gap may lead to a permanent cure."

Otherwise treatment would consist in the endeavour to prevent sepsis by appropriate dressings. Now, in the presence of the usual thin tissue-paper-like covering this is

an attainment wellnigh impossible, and in addition there is frequently the complication of obstruction. The obvious aim would appear to be the safe return of the contents to the abdomen at once. It is difficult to understand the need for postponement of operation "to a favourable age, six months or more," for all our experience goes to prove that infants stand the operation for this as well as ordinary hernia very well. This view is held by the French surgeons generally. Jaboulay and Patel,[17] quoting many authors in support, urge operation at once, the danger of infection being so great. At one time, on account of bad operative results, the Germans[6] relied on the application of an alcoholic compress bandaged firmly over the umbilicus, but this treatment is now permissible only in deformities too large for operation.

Operation consists in opening the sac, separating it from the contents, and returning the contents if healthy to the abdomen. The vessels of the cord are carefully ligated at the neck of the sac. In late cases gangrenous bowel may be met with and the outlook is hopeless. When a Meckel's diverticulum is encountered it should be removed. Occasionally there is difficulty with adhesions, and when the hernia is very large the replacement of all the contents may be exceedingly difficult. An appendicostomy[13] can with advantage and without difficulty be done. The appendix is brought out at a small stab wound made on a piece of gauze held within the abdomen close to the anterior superior iliac spine. This is of benefit in relieving distension and in the administration of fluid by the colon in after-treatment.

ILLUSTRATIVE CASES.

Case 1.—Baby W., aged 2 days. Admitted with definite signs of intestine obstruction. There was a swelling at the base of the cord about the size of a small orange; its coverings were thin and transparent, and somewhat soiled and septic-looking; the bowel contents were clearly visible through the coverings. On opening the membrane the caecum and appendix and part of the ileum were found in the sac. They were folded over, producing complete obstruction (Fig. 1). They were returned to the abdomen and appendicostomy done as described above. The sac was removed low down, the peritoneal edges and the recti sheaths brought together with sutures and the skin sutured. Salines were given by the appendix opening and the child made a good recovery. The appendicostomy was closed at the end of fourteen days.

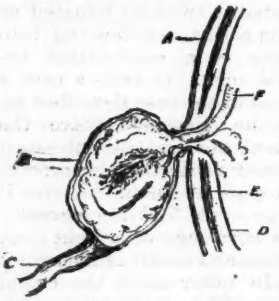


FIG. 1.—A, Skin. B, Fused layers of amnion, Wharton's jelly and peritoneum. C, Umbilical cord. D, Parietal peritoneum. E, Fibres from rectus sheath. F, Ileum. Contents: Caecum and appendix twisted on ileum.

Case 2.—Baby McC. Admitted one hour after birth, presented an irreducible swelling of the size of an orange at the base of the cord. The sac was opened and a greatly thickened and distended Meckel's diverticlum was exposed and removed. The operation was completed, as above, without appendicostomy—there being no indication for it—and the recovery was uneventful (Fig. 2).

FIG. 2.—A, Skin forming funnel-like process at base of swelling (Case II). B, Fused layers forming covering of swelling. C, Umbilical cord. D, Parietal peritoneum. E, Rectus muscle. F, Ileum. Contents: Meckel's diverticulum

Case 3.—Baby N. Admitted, aged 1 day, with large umbilical swelling in the tissues of the cord. The coverings were opaque, but there was no doubt of the intestinal contents on examination. Operation, performed as above, revealed a sac containing the caecum and appendix; but in this case there was no obstruction of the bowel, and the sole danger lay in infection. Recovery was uneventful.

Case 4.—Baby S., aged 2 days. This case illustrates the result of delay. There was a small opening at the umbilicus through which the greater part of the bowels had herniated. The sac, stretched thin, had given way, and coils of bowel were quite exposed and had pieces of cotton-wool dressing adherent when the child was admitted. The possibility is that the sac was torn at delivery. The exposed intestines were red and inflamed, the peritoneum being obviously infected. A closed Meckel's diverticulum was adherent to the remains of the sac. Operation was undertaken, but, as was expected, death took place later. At necropsy generalized peritonitis, patent ductus arteriosus and patent foramen ovale were found.

Case 5.—Baby J., aged 4 months' illustrates an almost spontaneous cure of a small exomphalos. The child had a small rounded pedunculated swelling at the umbilicus—the so-called umbilical polypus. On removing this, a small peritoneal sac was found in the middle of it (Fig. 3). The outer layer of the swelling had become covered with epithelium from skin.

FIG. 3.—The "polypus" split in two. A, Skin. B, Wharton's jelly. C, Peritoneal sac. D, Pedicle.

Etiology.

It would appear that three main groups of factors require consideration. They are: possible antenatal conditions, developmental causes, and defects in function.

In the first group abnormality in the foetal position was thought to be the cause. Sir James Simpson[7] stated that such cases were nearly always abdominal presentations. This lends support to another theory, that the position of lordosis in the foetus may be a cause, but the origin of such a lordosis falls into the second developmental group.

Ballantyne states that hydramnios may be a cause, and there is increasing evidence that hydramnios is a common concomitant of other foetal malformations.

Lordosis in the foetus may be caused by a pull on the omphalo-intestinal duct, and Bryce[8] suggests that a retroflexion of the trunk of the embyro may result from defective development of the allantoic stalk and hind gut interfering with the curling of the tail end of the embryo. This view is favoured by Aschoff.[9]

An unduly short cord of itself might reasonably be a factor by causing stretching, and in extreme cases the effects of some such stretching are evident in the marked involvement and alteration of shape of the chest and solid organs. Similarly a persistent omphalo-vitelline duct may cause stretching, and it is interesting to note that one author[10] states that such tension may be so marked in the embryo as to interfere with the downward growth of the rectum and hence cause imperforate anus. In this connexion it may be noted that the vitelline duct persisted in two of the four cases.

It seems unlikely that a defect in the skin development is a factor, for there was even an excess of skin in some cases. A defect in the development of the mesoblastic layer of the abdominal wall is more likely. A general enlargement of the abdominal viscera might cause a failure in the closure of the abdomen, but in none of the cases could such enlargement be made out. Moreover, a case has been recorded where the abdominal wall closed and nipped off a loop of jejunum (Ahlfeld). This loop would most likely be the normal umbilical loop of intestine, which is present in the commencement of the cord up to the third month of intrauterine life (Bolk).[11]

This leads to a consideration of possible functional defects. Whilst the cutting off of the umbilical loop may have been due to excessively rapid development of the mesoblastic layer of the abdominal wall, the converse could equally take place. Thus, a defect in the development of mesoblast might result in a patency. Now, a defect in function of the mesoblast—that is, of the recti muscles—could act in the same way. This functional defect could originate in trophic, nerve or toxic irregularities. The condition is distinctly analogous to that of spina bifida, and this was long ago considered due to a dropsical condition in the foetus, producing a hernia of the meninges by interfering especially with the growth of mesoblast. This dropsy might originate in foetal heart disease, and in one of our cases there was a marked foetal heart disease. On the other hand, such cardiac weakness could conceivably arise from toxins received from a diseased maternal uterus. It was suggested in a recent review[12] of the subject of spina bifida that uterine conditions in the mother required closer investigation as possible causes of that malformation. The same applies to exomphalos, but, unfortunately, no details were got with reference to our cases.

Finally, we fall back on the trophic function, irregularity in the controlling mechanism of which may account for

almost any congenital deformity. In this connexion, Hertwig's[12] work is of great interest, for he succeeded, by applying chemical solutions to the ova of fish and amphibians, in producing many deformities, including spina bifida. A purely chemical and metabolic factor may therefore be at work.

There seems little need now for the consideration of the discountenanced amniotic band theory as a cause of any such deformity.

Conclusions.

1. The cause of exomphalos is most likely a defect in the development or function of the mesoblastic layer of the abdominal wall.

2. Treatment, to be successful, must be immediate and consists of open operation.

To my chief, Mr. Alex. MacLennan, I am indebted, not only for permission to publish these cases, but for much valued help and suggestion.

REFERENCES.

[1] Ballantyne, *Manual of Antenatal Pathology.* [2] Friend, *Surgery, Gynecology and Obstetrics*, vol. xxxi, September, 1920. [3] Moschcowitz, *Annals of Surgery*, 1915, lxi, 570-581. [4] Bonney, *Proc. Roy. Soc. Med.*, 1913-14, 228. [5] McAdam Eccles, *Textbook of Hernia*, 1908. [6] Ahlfeld, *Monats. f. Geburt. u. Gynäk.*, vol. xxii. [7] Simpson, *Trans. Edinburgh Obstetrical Society*, 1886-7, xii, 33. [8] Bryce, quoted in *Malformations of the Foetus*, Birnbaum and Blacker, 1912. [9] Aschoff, *Virchow's Archiv*, 1896. [10] Küstner, Müller's *Handbuch der Geburtshülfe*, 1838. [11] Bolk, *Centralbl. f. Gynäk.*, 1908, p. 54. [12] Spencer, *Med. Science, Abstracts and Reviews*, vol. i, No. 1. [13] MacLennan, *Clinical Journal*, August 18th, 1920. [14] Twining, *Journ. Obstet. and Gyn. of the British Empire*, 1913, xxiv, 227. [15] Twining, BRITISH MEDICAL JOURNAL, 1913, ii, 1159. [16] Lloyd, Ibid., 1906, i, 1220. [17] Jaboulay et Patel, *Hernies*, 1908, p. 244.

THE CURE OF HAEMORRHOIDS WITHOUT OPERATION.

BY

J. C. LYTH, M.B., B.S.LOND.

I AM somewhat diffident about placing my views on this subject before the readers of the BRITISH MEDICAL JOURNAL; but it is a journal which is read chiefly by general practitioners, and it may be helpful for general practitioners sometimes to read what one of their number thinks, even though it be heresy he preaches.

My text is that operation for haemorrhoids is not always successful, is usually unnecessary, and is rarely justifiable.

I have drawn no distinction between internal and external haemorrhoids, because I think most practitioners will agree with me that such a distinction is purely artificial. Varices exist inside the anus; some are forced down in defaecation, and fail to get back before the mucous membrane covering them is gripped by the sphincter. In the first instance they are internal; after coming down they are external. If they can be returned with the aid of providence and a little coaxing, they become internal again until next time. Finally, they come down for good, and cannot be returned.

Up to a point the presence of piles outside the anus may be taken as an indication of the presence of more piles inside ready to come down. An author recently stated the limit in number of potential piles to be eight, that being the number of venous loops inside the anus. It is certainly a fairly large number, and in practice I suppose none of us have found the whole eight possible piles outside, with consequently no more piles, or possibility of piles, inside.

The critical period is when a pile is changing, or has recently changed, from inside to outside the anus. So long as it is inside and remains always inside (even during defaecation), it does little harm. When it prolapses during defaecation, and when it first comes out for good, it causes all the pain, haemorrhage, and irritation, and is liable to thrombosis and suppuration. Later, after a varying but usually considerable period, it becomes covered with squamous epithelium, and therefore insensitive, and small, and is no more than an inoffensive tag of skin, which, with reasonable cleanliness, need cause no trouble. All this may be rather crude pathology, but it is clinically, I think, a fair summary of the sequence of events.

Operation is not always successful. The usual operation removes the piles which are outside, and perhaps the more prominent of those inside. In regard to this—analogously with those of the leg—it must be remembered how remarkably varices may disappear under the conditions of anaesthesia and an alteration in the position of the body. Note, too, what a difference there is between the conditions of straining and prolapse of defaecation and those of the lithotomy position.

The operator at the same time puts the sphincter ani out of action for the time being, and gives the patient very good advice as to diet, exercise, and aperients. To my mind, if the piles do not "recur"—or, to be more accurate, if more piles do not come down—it is likely to be as much due to the advice of the operator, impressed on the patient's mind by the expense, trouble, and pain of the operation, as to anything done at the operation. The author to whom I have referred admits this, but suggests a very much more radical operation, amounting almost to a resection of the mucous membrane lining the whole canal of the anus and lower rectum. I cannot speak to the results of this, but it is not the operation for piles usually undertaken, and I have seen certainly one case of most troublesome stricture resulting from a much less sweeping operation than this.

The usual operation for piles is not a dangerous one; but it is an operation, and as such, from the point of view of the patient and the conscientious practitioner, to be avoided if possible; it is painful and it is not certain to cure.

Now for the alternative: The usual palliatives—ung. hamamelidis, ung. gallae cum opio, etc.—are no more than palliative. They to some extent relieve pain, but do little to stop the bleeding and nasty mucous discharge. I consider them only fit for use during an attack of thrombosis—after the worst has been got over with fomentations—and also if it is essential that a patient should go about his work after a recent defaecation.

But there is a means of curing piles, in the sense that they can be made entirely innocuous. It is a question of reducing from a year or two to a month or two the period necessary to change a turgid mucus-covered and tender varix into a skin-covered excrescence and preventing the piles still inside the anus from coming out.

I have seen the application of calomel powder recommended and have tried it. It is useful, but calamine powder is much more so. Calomel is a trifle irritating, but calamine is soothing and is astringent as well. But the mere instruction to apply calamine will do little good.

Suppose a bad case, with a ring of prolapsed piles surrounding the anus, some perhaps denuded of epithelium, intensely and agonizingly tender, bleeding on defaecation, and continually discharging blood-stained mucus, which stains the linen and renders the patient's life a burden. The following plan will change the picture:

1. The bowels must be moved the last thing at night before retiring. It may be difficult to alter the usual habit of morning defaecation, but it is essential, and can be contrived by suitable aperients.

2. It is hardly necessary to say the bowels must be moved every night, but a loose action must be avoided. Even a slight degree of constipation so long as a nightly action of the bowels is secured, while not so good as an easy action, is infinitely preferable to the slightest diarrhoea. This means care and discretion in the use of aperients.

3. After the motion, and after gentle sponging with tepid water, calamine powder is to be applied in the following way: it is to be freely and thickly placed (not merely sprinkled) on a sanitary wool and gauze pad. It is cheap enough, but it need not be wastefully used if care be taken that there is a sufficient quantity (say a couple of teaspoonfuls) on the exact part of the pad which will remain in contact with the piles when the tapes are tied round the waist. It is necessary that the pad should be pulled firmly up into position.

If there is much discharge the pad should be changed in the morning and fresh calamine applied. If at first there is too much discomfort during the day, it is permissible to substitute ointment—for example, hamamelis—thickly applied on the pad worn during the day. But it must be explained that this is a step which somewhat retards results and does no permanent good. If the patient has the misfortune to have the bowels moved in the morning or during the day he will almost certainly have to be allowed to use ointment on the pad which he then applies, to be changed for the powder at night.

It will be found that after a time, probably not more than a fortnight or three weeks even in the bad case we

have supposed, the piles will be sufficiently shrunken and dried and painless by the morning for the daily pad to be dispensed with, unless the misfortune alluded to occurs. Meanwhile, those of the piles normally inside, but which prolapse on defaecation, are coming into contact with the calamine before their gradual return during the night, and, subjected to its astringent action, are becoming smaller and less sensitive.

After a further lapse of two or three weeks the patient will find that, although there may be some prolapse of the internal piles on defaecation, this is so readily reduced, or reduces itself on attaining the recumbent position, that he can begin to leave off the pad at night, unless he has been either too constipated or too relaxed. He is then in a fair way to being cured. He must always have his bowels moved at night, and he is wise to have calamine and a pad available. It is, in my experience, quite futile to attempt to apply the powder in any other way than that described.

The habit of a nocturnal action of the bowels, which allows the immediate assumption for many hours of the recumbent posture, will go far to prevent any further prolapse of such piles as remain inside the anus; and I believe that in this way it will ultimately cause their reduction in size; because it is the persistence of the partial prolapse which normally occurs in defaecation which has gone far to bring them to their condition at the beginning of treatment. I assume that the haemorrhoids are not due to any direct obstruction to the portal circulation or to any local cause such as pregnancy or growth; and that exercise and limited diet will be advised.

With this alternative to operation—an alternative which is inexpensive, which entails no danger, no interference with business, and which is likely to be permanently successful—I think I am justified in my heretical proposition that operation is usually unnecessary and rarely justifiable. The remedy is almost as simple as dipping seven times in Jordan; and for that reason, doubtless, there will be those who prefer that the surgeon should "strike his hand over the place" by way of operation. Likewise, there will be the advocates of Abana and Pharpar in the shape of ointments and lotions. None the less, I hope there will be others who will emulate Naaman and decide to give this method a trial, for I have had such excellent results with it in the past three years that personally I shall advise operation only as the last resort.

RESECTION OF INTESTINE FOR ACUTE INTUSSUSCEPTION: TWO CASES OF RECOVERY.

BY

A. H. SOUTHAM, M.A., M.CH.OXON., F.R.C.S.ENG.,

RESIDENT SURGICAL OFFICER, MANCHESTER ROYAL INFIRMARY;

AND

C. H. CRAWSHAW, B.CH.CAMB., F.R.C.S.ENG.,

LATE ASSISTANT RESIDENT SURGICAL OFFICER, MANCHESTER ROYAL INFIRMARY.

THE published results of enterectomy in cases of acute intussusception in infants show such a high mortality that the following cases, each of a rather unusual type, may be of interest.

Rowlands and Turner[1] quote Gibson, who says that in his collection of 1,000 cases he found only one case of recovery after resection for this condition. In an earlier collection of 239 cases there was no recovery from irreducible intussusception in a patient under seven years. Moynihan[2] quotes A. E. J. Barker, who says he had never seen a recovery after resection in a gangrenous case, and never expected to see it. Fagge[2] reported 5 cases that were irreducible and all were fatal.

CASE I.

John C., aged 3 years, was admitted to the Manchester Royal Infirmary on December 11th, 1919. His mother stated that he had not been well for a week. He had been vomiting continually, and his bowels had not been moved for five or six days. No blood had been passed as far as she knew. The child looked ill, the temperature was subnormal and the pulse 130. The abdomen was very distended, and no tumour was palpable. On rectal examination a little blood and mucus remained on the finger-stall.

A diagnosis of intussusception was made, and laparotomy immediately carried out. Owing to the child's poor condition, Mr. K. B. Pinson kindly gave gas and oxygen anaesthesia. The abdomen was opened by a right rectus incision, and a tumour, extending to the splenic flexure, was discovered. This was reduced easily at first by expression. After the gut had been reduced through the ileo-caecal valve, it was seen to be a double intussusception, an ileo-caecal being superimposed upon an enteric intussusception. The terminal portion of the ileum was found to be in a bad condition; it was irreducible, and there were several gangrenous patches which had perforated during the attempt at reduction. It was therefore decided to resect this portion of the ileum. This was rapidly carried out, and an end-to-end anastomsis performed between the cut ends, two layers of linen thread being used for the suture line. The portion of gut excised measured 10 in., and there were five gangrenous patches involving all the coats present. The abdominal wall was closed with through-and-through sutures of silkworm gut. The operation lasted twenty-five minutes.

Post-anaesthetic vomiting was completely absent and the child was able to take fluids immediately, shock being very little in evidence. The bowels moved the following day and each day subsequently.

Apart from a little sepsis in the wound the child made an uninterrupted recovery, and was discharged from hospital on January 13th, 1920. We have seen the boy several times since; he is in excellent health, and has had no further abdominal trouble.

CASE II.

M. R., aged 6 months, was admitted to the Manchester Royal Infirmary on December 13th, 1919. She was thin, cold, clammy and collapsed; about 7 in. of intestine carefully wrapped in newspaper protruded from the anus. The diagnosis from prolapse was not difficult, and there had been symptoms of intussusception for about twelve hours before the intestine had appeared externally.

When first seen the last two or three inches of protruded gut were very oedematous, dark purple and gangrenous. The swelling caused by the oedema quite prevented the gut from being returned through the anus, consequently the only procedure possible was to resect the intestine externally and push back the stump. This was done in the manner often known as Jessett's operation, with this difference, there being no ensheathing layer, the time usually occupied in opening and closing this was saved and the operation simplified.

The gut was pulled out still further and clamped in the healthy part thus made accessible, about 2 in. from the anus and about 7 in. from the gangrenous apex. The part distal to the clamp was now removed one inch from the clamp, and the entering (inner) layer of the intussusception sutured with continuous thread to the encircling returning layer. Only one row of sutures was applied, taking up all the coats of intestine. Some difficulty was experienced with the mesentery which was between the two layers, and made a large thick mass, and also with the disparity between the diameters of the two concentric circles of intestine. The stump was now easily reducible through the anus, and was kept in position for twelve hours by a pad of gauze on a large rubber tube in the anal canal and held there by a perineal bandage. No anaesthetic was used, the patient being practically moribund and quite motionless throughout the operation.

The point of anastomosis could afterwards be felt high up on the left side with the finger in the rectum, but there was no tendency to a recurrence of the condition. There was no post-operative vomiting, fluids were administered at once and recovery was quite uneventful. The child was seen five months afterwards; she was then quite fat and apparently in perfect health.

On examination of the part removed, the ileo-caecal valve and appendix were found at the apex—that is, the intussusception was of the ileo-caecal type. About 6 in. of intussusception were resected, which corresponded roughly to the whole of the caecum, ascending colon and part of the transverse colon, with an equivalent length of included small intestine.

In both these cases the intestine was gangrenous, and an extensive resection was necessary, but complete and uneventful recoveries followed.

The successful issue was, we consider, to a great extent due to the measures taken to safeguard the patient from the effects of shock. We suggest that shock can be considerably reduced, and the outlook therefore improved, by the following expedients:

1. *Speed* in operating is essential. Everything should be ready to hand, and the closure of the laparotomy wound should be carried out by through-and-through sutures. Suture in layers is unnecessary and expensive in time.
2. The *body heat* should be preserved by bandaging the child in a suit of gamgee and the theatre maintained as warm as possible.
3. The *anaesthetic* appears closely related to the amount of shock present. In one of our cases this was minimized by using gas and oxygen, whilst in the other no anaesthetic was used.

Shock further depends on the *water-starvation* resulting from the previous vomiting and loss of fluid. In both the

above cases post-anaesthetic vomiting was entirely absent, and fluids were given and retained immediately the operation was completed. The body nutrition therefore recommenced at the earliest possible moment.

The chief difference between these two cases was that in one the abdomen was opened, whilst in the other it was not. It is suggested that the shock consequent upon opening the abdomen may be considerably reduced by employing the above methods, and the prognosis, therefore, proportionately improved.

REFERENCES.

[1] Rowlands and Turner, *Operations of Surgery*, 1915, vol. ii, p. 346.
[2] Moynihan, *Abdominal Operations*, vol. ii, p. 126.

COMPLETE HEART-BLOCK IN A CASE OF DIPHTHERIA.

BY

R. CLAYTON ALLEN, M.R.C.S., L.R.C.P., D.P.H.

THIS case, admitted under my care in the Belper Isolation Hospital, was apparently doing quite well, until the seventh day of disease, when heart-block suddenly developed.

The notes are as follows:

M. L., a girl aged 17 years, was admitted to the hospital on September 1st, 1920. She was taken ill on August 29th with a feeling of malaise and a sore throat, and the following day was seen by her doctor, who administered 4,000 units of antitoxin, followed by a further 2,000 on the following day. On admission to hospital the tonsils and uvula were seen to be covered with membrane, and the neck was much swollen. Temperature 102.6°, respirations 28, pulse 120; slight difficulty in swallowing and face very flushed; heart regular and no cardiac dilatation. Brandy ½ oz. was given four-hourly; the throat was swabbed and sprayed two-hourly, and hot fomentations applied to the neck. Patient rapidly improved, and on the morning of September 3rd was very comfortable. Temperature 99°, respirations 20, pulse 96, when brandy was stopped; the improvement continued until 5 p.m. the following day, when the patient suddenly had a "convulsion"; marked cyanosis, and pulse became imperceptible; temperature subnormal. Brandy ½ oz. was given and oxygen administered.

I saw the patient about 5.30 p.m., when she was breathing quietly; respirations 26, slight cyanosis; pulse 26, temperature 96.6°. There was no cardiac dilatation, and on auscultation the ventricle could be heard beating 26 per minute, whilst over the auricles could be heard muffled sounds—52 per minute. Liq. strych. mⱡiv was ordered four-hourly, and brandy ½ oz. four-hourly; oxygen to be administered five minutes every quarter of an hour, and a mustard plaster placed over cardiac region. I saw the patient again at 8.30 p.m., when she seemed quite comfortable; still cyanosed, and the heart in the same condition as before. I saw her again at 11 p.m. in consultation with Dr. Barber of Derby.

About 1 a.m. on September 5th she had another slight convulsion, after which the patient slept until 7 a.m., when the pulse was 56, temperature 97°, respirations 18. At 10 a.m. she had a further convulsion and became more cyanosed; temperature 97°, pulse 22, respirations 18. The oxygen was still continued, and 1 c.cm. of pituitrin was administered subcutaneously.

During the day the patient did not improve, took nourishment badly, and had incontinence of urine. A further cubic centimetre of pituitrin given at 2 p.m. The patient remained listless until 8.45 a.m. September 6th, when she vomited; this was followed by a convulsion. Temperature 96.8°, respirations 16; pulse imperceptible, but the ventricle could be heard 22 per minute, and the patient complained of acute pain over the cardiac region. Death took place at 11.20 a.m. The urine showed a marked cloud of albumin the whole time the patient was in hospital.

Note by DR. HUGH BARBER.

Myocardial poisoning is a common event in diphtheria, and may be accepted without doubt as the cause of death in this case, but from the clinical point of view it was an unusual form of heart failure.

When seen by both of us together there was little distress, the radial pulse was strong and regular, 26 beats to the minute; the heart was not dilated, the cardiac impulse was vigorous, rate 26, with clear normal sounds. Over the base of the heart muffled sounds could be heard suggesting auricular beats twice as rapid as the ventricular. It was not possible to take a jugular tracing to prove the diagnosis, but complete heart-block due to poisoning of the auriculo-ventricular bundle may, we think, be taken for granted. The case presented unusual difficulties both in treatment and prognosis.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TORSION OF THE TESTIS IN AN INFANT.

THE infant was born on February 13th, 1920, and on the 18th the nurse noticed some swelling of the right side of the scrotum. This swelling increased, and on February 21st I saw the infant, with Dr. L. Gifford Nash of Turvey, Beds. There was no pain, and the baby seemed quite well, and was taking his food. The right side of the scrotum was swollen, the skin was blue, and the superficial veins dilated. The skin was adherent to the testis, which was much swollen and tender. The cord was thickened as high as the external ring, where there appeared to be a small nodule or swelling. I diagnosed a torsion of the testis and cord, and advised operation, which was performed on February 22nd.

An incision was made into the inflamed tissues of the scrotum, the separate layers of which were indistinguishable, until the cavity of the tunica vaginalis was reached and a thick yellow fluid gushed out. The testicle, purple in colour, appeared lying at the bottom of the tunica vaginalis. The cord was tied high up in the scrotum and the testis removed. No definite torsion of the cord was seen, but it was not exposed as high as the external abdominal ring. The infant made a good recovery.

The specimen removed was sent to Mr. S. G. Shattock, at the Royal College of Surgeons, who reported: "There is intense congestion of the tunica vaginalis and tunica albuginea. On dividing the testis there are seen superficial extravasations in its substance. I think that your first impression—namely, that the condition was caused by torsion—is correct."

Since I first reported a case of torsion of the testis (BRITISH MEDICAL JOURNAL, 1891, vol. i, p. 1226) many cases have been reported. A few cases have been recorded in infants. The earliest on record is that reported by Taylor (BRITISH MEDICAL JOURNAL, 1897, vol. i, p. 458), which was operated on at the age of two days. Rigby and Howard (*Lancet*, May 25th, 1907) reported one at seven months. Edington (*Lancet*, June 25th, 1904) also reported one at seven months. Dowden (*Scottish Med. and Surg. Journ.*, September, 1901) reported cases at five and fourteen months. Including the present case six have been recorded within fourteen months, which appears to be an unusual proportion. These cases show the liability of torsion occurring in infants, and that it is probably the only cause of acute inflammatory swelling in the scrotum in early life.

Bedford. W. GIFFORD NASH, F.R.C.S.

TREATMENT OF LOCAL LEISHMANIASIS.

WITH regard to recent discussions on the best local treatment for local leishmaniasis (Delhi sores, Baghdad boils), I should like to mention the treatment suggested by Surgeon-General Patterson, when Principal Medical Officer of the Aldershot District, to me, when I was in charge of the surgical wards of the Cambridge Hospital, Aldershot. A soldier had recently returned from India suffering from an intractable form of Delhi sore on the left wrist, which I had treated by scraping away the granulation tissue, followed by applications of solid silver nitrate, but with little progress as to healing. The treatment recommended to me was to scrape and clean the sore again thoroughly, and lightly apply solid caustic potash and dress. After one application the granulation tissue came away, and the sore healed as a clean healthy ulcer, and there was no return, either local or general. I gather that our present treatments are not satisfactory. I therefore put forward this method for trial by specialists and others.

E. J. ERSKINE RISK, Col. A.M.S.(ret.),
London. Ex-Commandant, R.A.M.C. College.

IN Java 358 cases of plague occurred last December, all of which were fatal.

PROFESSOR J. LÉPINE has been elected Dean of the Lyons Faculty of Medicine in succession to Dr. Hugounenq.

DR. PIERRE BAZY has been elected member of the Section of Medicine and Surgery of the Académie des Sciences in place of the late Professor Guyon.

Reports of Societies.

EXOPHTHALMIC GOITRE.

A COMBINED meeting of the Clinical Section of the Royal Society of Medicine with the Sections of Medicine and Surgery was held on February 11th, for a general discussion on Graves's disease. Sir ANTHONY BOWLBY, President of the Clinical Section, took the chair, and the attendance was so large that the usual meeting room had to be exchanged at the last moment for the Barnes Hall, which was crowded out. About twenty members of the Sections signified their desire to participate, and after the discussion had been opened on both the surgical and medical sides, it was adjourned to February 25th.

Surgical Treatment: Indications and Contraindications.

Dr. HECTOR MACKENZIE said that in former discussions he had expressed scepticism with regard to surgical treatment of exophthalmic goitre, believing operation to be attended with undue risk. Ten years ago, at a similar discussion, a paper was contributed by Mr. T. P. Dunhill, of Melbourne, who reported results of surgical treatment so much superior to anything the speaker had seen in this country that he had grave doubts whether the cases were of the same class. These operations in Australia had been done under local anaesthesia, whereas all the cases of which he had personal experience were done under general anaesthesia. In 1915 he had under his care a patient who, after eighteen months' treatment, showed no obvious improvement. Mr. Dunhill, who had come over with the Australian Expeditionary Force, was consulted, and did partial thyroidectomy under local anaesthesia. The operation passed off perfectly: when it was half-way through the patient asked when it was going to begin! The effects of the operation were immediate, and the patient was better in every way. A colleague at St. Thomas's, the late Mr. Rouquette, was initiated into Mr. Dunhill's technique, and performed a number of operations, and since his death the work had been carried on by Mr. Romanis, who had performed over 200 operations, with only five deaths—a remarkable result when it was remembered that these were not cases selected as specially favourable. At the time his article on exophthalmic goitre appeared in Allbutt and Rolleston's *System of Medicine* (1908) the mortality at operation was given as 20 per cent. The effects of the operation depended to a great extent upon the amount of gland which the surgeon was able to remove. Some cases had required more than one operation.

The first case of the series which started in 1915 required three operations: in the first the right lobe was removed; in the second, fifteen months later, the greater part of the left lobe was removed; and in the third, eleven months later still, two-thirds of the remaining portion of the left lobe was removed. The result after the third operation was entirely satisfactory. The heart quietened down, and, although the eyes were still prominent, the frightened look had disappeared, and the patient had since won two first prizes for pianoforte playing, and showed no nervousness when playing in public.

The usual result following partial thyroidectomy was greater tranquillity, an increase of the general strength, and a slowing of the heart's action. Usually, when only one lobe was removed, amelioration was all that could be hoped for, though the prospects were much better than they would have been without an operation at all. The exophthalmos was the most persistent symptom.

With regard to contraindications (Dr. Mackenzie continued), auricular fibrillation might be thought to contraindicate operation, but he had seen cases operated on in which this had been present, and the result of such operation was that the heart became quieter and more regular. He had ventured an operation also in a case in which the patient was bordering on mental derangement, and her delusions disappeared. The presence of undoubted diabetes would certainly contraindicate, but he did not think that the occasional presence of sugar in the urine would militate against operation. Dread of the operation was perhaps the most important contraindication; he would be very unwilling to advise operation on any patient who dreaded it much. On the whole question his feeling was that every patient should have a fair trial of medical treatment, and if she did not improve within a reasonable time—three or six months—the possible benefits of surgical treatment should be mentioned to her. In thirty of his private cases which had been operated on the average duration of symptoms before operation was four and a half years, so that no one could accuse him of rushing into operation. The results of medical treatment were disappointing in many cases, while, as for *x*-ray treatment, for a considerable number of years he saw no cases which he could regard as cured by *x* rays. At last one patient who had been coming to the *x*-ray department for three years appeared to be cured of the exophthalmic goitre, but developed myxoedema, which yielded to thyroid treatment, and this patient then showed as good a cure as he had seen in any case. No treatment was ideal; the ideal treatment would be the provision of some antidote to the thyroid poisoning.

Operation: Conditions and Technique.

Mr. JAMES BERRY said that although his own views regarding the value of operation had not changed substantially, he was rather less sanguine than before, owing to the great tendency to relapses even after operations most successfully performed. He congratulated Dr. Mackenzie on his "conversion." There was a time when both Dr. Mackenzie and himself were strongly opposed to all operations for exophthalmic goitre. His own "conversion" was of long standing, Dr. Mackenzie's was more recent, but the tardy convert often became the most zealous apostle. On the general question he had two remarks to make: (1) The result of operation was that within a very short time—generally a few days—the patient felt that she had derived immense benefit from the operation; the feeling of depression disappeared, and the tachycardia diminished very greatly and might disappear completely in a few weeks. (2) The operation, even when carried out under the best conditions, involved considerable danger to life—a danger far greater than in operations for simple goitre. The mortality in this latter condition had been reduced by most masters of thyroid surgery to a fraction of 1 per cent., but the operation for the removal of true exophthalmic goitre generally involved a mortality of at least 3 to 5 per cent. At the same time, too much stress must not be laid upon mortality. The disease was a very serious one, and a mortality even of 5 per cent. was a risk which most patients suffering severely from this disease would willingly undertake. In speaking of exophthalmic goitre they did not always mean the same thing. At least three different conditions were included in that term. In one of these, which he called false exophthalmic goitre, the patient had an ordinary simple goitre, with a little tremor, a little nervousness, and no exophthalmos. He would not dream of putting such cases into his statistics, though they were commonly called exophthalmic. The mortality here was not in the least above that of ordinary goitre. In another condition there was an adenoma—a tumour very likely of long duration—to which all the symptoms of exophthalmic goitre had been superadded. Thirdly, there was the true exophthalmic goitre with the well known symptoms.

In Mr. Berry's view, only two operations had any value—namely, the removal of a portion of thyroid gland and ligation of the thyroid arteries. The ligation of the inferior artery he had completely abandoned; it was a difficult operation, and of scarcely less danger than the removal of the whole lobe, which was far more likely to cure the disease. The ligation of the superior artery was comparatively easy, and, on the whole, safe. He had not lost a case for eight years, during which time he had performed a large number of these operations.

His hospital cases from 1913 to 1919 where ligation of the superior thyroid artery was done numbered 27 females and one male. The particulars were as follows:

Bilateral (simultaneous)	5 cases
Bilateral (at different times)	14 ,,
Unilateral	9 ,,

Nine of these 28 subsequently underwent extirpation of one lobe.

In the removal of the gland the question arose as to how much should be removed. He had almost abandoned the practice of removing both lobes; it involved too much risk. Nor did he usually remove the whole of one lobe. It was wrong to do thyroidectomy when the patient was suffering from acute excitement, yet it was just during the

period of exacerbation that the patient, and sometimes the general practitioner, were most anxious for operation. The surgeon should resist the temptation to operate at such a time. Operation should never be performed until the patient had been resting quietly in hospital for at least a few days. He did not operate at any stage on patients who were steadily improving, nor on patients—and there were many such—who did not feel at all ill. He was coming more and more to believe that a very light open ether anaesthesia was preferable for most cases. Except where there was acute intoxication or myocardial degeneration it was usually haemorrhage that was the cause of death in operations for exophthalmic goitre. Even a comparatively small amount of haemorrhage, which would be of little or no importance in goitre, might easily be fatal in exophthalmic goitre. The after-treatment might be summed up in the one word "water." The patient should be encouraged to drink many pints.

Mr. Berry gave the following statistics of his results after the removal of true exophthalmic goitre during the years 1913–19:

Patients practically well	53
Much improved	18
Improved	1
No improvement	2
Worse	1
Died after operation	3

The Justifiability of Surgical Risk.

Mr. T. P. DUNHILL dealt with the grounds on which, he considered, some intervention other than the purely medical might be necessary. Death, he said, was not the only tragedy in exophthalmic goitre. An eye might be lost; many cases also went on to a generalized oedema. Treatment other than medical, therefore, must at least be considered. All would admit that many cases recovered under medical treatment. When it was found out which cases recovered, and why they recovered, a great advance would be made. The idea of operation should not be entertained until after the removal of any toxic focus, complete rest, and systematic drug treatment. His personal experience of *x*-ray treatment had not been satisfactory. The pulse did not come down, the exophthalmos did not alter, and the tremors did not disappear. What was the outlook for patients who were not improving under medical treatment? Was it sufficient for medical men to claim that at least they had kept them alive? It was said that the disease ended either in recovery, myxoedema, or death. Some recovered certainly, very few went on to myxoedema: what about the others? Numbers of them were in various grades of ill health, down to being bedridden wrecks. It was justifiable to take some risk to free these patients from the miserable existence they led. As for the amount of relief which might be expected, the exophthalmos would generally disappear if the cases were sent for operation within a reasonable time, and if sufficient gland tissue was removed. In the strongly marked cases resistant to medical treatment, putting the word "cure" on one side, he would say that after operation these patients might be raised to the industrial level. A great many cases would not be cured without removal of a portion of the second lobe. He had never yet lost a patient after a second operation for exophthalmic goitre. In some cases the removal of one lobe might turn the scale, particularly cases which were nearly winning their own battle, but these were not usually the cases which came to the surgeon. It was very important to conserve the blood supply of the portion which was left intact. The thyroid operation in exophthalmic goitre differed from abdominal operations, which might be undertaken by the surgeon with some equanimity, and in which it was not a matter of great importance whether the time taken was twenty minutes or an hour and a half. The operation for exophthalmic goitre had never been done by him without fear and grave anxiety, even in cases which seemed simple. He pleaded for earlier operation, which would be safer and would relieve the strain on patient and surgeon alike.

The Natural History of the Disease.

Sir W. HALE-WHITE said that he had to admit that there was no specific medical treatment: the treatment was symptomatic. But he thought it might interest the Sections if he gave an account of the natural history of the disease. He had lately been trying to obtain particulars regarding all his hospital and private patients during the last twenty years. A number were untraceable, but he got replies regarding 102, and he submitted his figures to an actuary to discover whether the expectation of life in people with exophthalmic goitre was much less than in normal individuals. The actuary replied that the figures were not sufficient data for a very definite opinion, but, roughly speaking, it appeared that the mortality among the sufferers from exophthalmic goitre was double that among healthy females of the same age. That gave rather an exaggerated view of the situation, because these people were young adults among whom, in health, the mortality was very slight, so that even double this mortality would not be a great mortality. It had to be remembered also that all these were cases of exophthalmic goitre which were bad enough either to go to hospital or to be sent by their doctor for a second opinion. He thought it might be concluded that the outlook for sufferers from exophthalmic goitre was that they were rather more liable to die than healthy people of the same age. This conclusion seemed justified by the fact that it was quite unusual to find the disease in the *post-mortem* room. The disease rarely killed, and, left to themselves, the people must generally get well, otherwise many people in old age would be found suffering from this condition, and such was not the case. Among the hospital cases which he had traced, 65 per cent. were found to have got quite well, 30 per cent. were much better, and 5 per cent. were better in some respect or other. Among the private cases the proportions were 74.5 per cent., 19.1 per cent., and 6.4 per cent. respectively. He had excluded from these figures the patients on whom operations had been done. There were cases in which he would willingly ask the surgeon to operate because they seemed to be going downhill, yet they might take a turn for the better without operation. He had notes of cases discharged from hospital as incurable many years ago in which, some time after discharge, a certain improvement began, and they were now quite well. He was not opposed to operation, but he thought that many cases would do quite well without it. All that they could do at present was to say to the sufferer, "We have been watching you for weeks or months (as the case might be); you are not getting any better, but at any time the natural history of your complaint seems to show that you may take a good turn. Nevertheless, we can offer you an operation with a mortality—diminishing as years go on—of, at present, from 3 to 5 per cent."

The Reason for Heart Failure.

Dr. J. S. GOODALL said that on beginning to study this condition he was soon impressed by the fact that, whether the case was looked at from the medical or the surgical standpoint, the heart was of supreme importance. A large number of the cases which were treated by physicians appeared to get gradual cardiac failure, while a certain number treated by surgeons died suddenly from the same cause. He commenced an investigation into the condition of the heart in this disease. He was particularly fortunate, because at the time he began this study he had at his disposal what he might term a clinical unit—an assembly in a nursing home of the most modern appliances for examining the heart: a four-stringed oscillograph, a two-stringed electro-cardiograph, an instantaneous *x*-ray apparatus, and a biochemical laboratory. Many hundreds of observations were made before the war came to upset some, though not all, of the arrangements. Ventricular fibrillation appeared to be the reason why these exophthalmic goitre cases succumbed to heart failure after operation, and the conclusion he arrived at from a study of his records was that there were two factors which tended to ventricular fibrillation, one of them a pre-existing myocardial degeneration and the other a high blood pressure. He believed that the blood pressure in exophthalmic goitre was triphasic: first a temporary rise, very transient, then a fall, and then a rise again. After operation the blood pressure tended to rise, and that rise might be so considerable that the blood pressure at the end of the operation was twice the pressure at the start. If there was a degenerated myocardium and it was suddenly confronted with a high blood pressure it was reasonable to expect calamity. If the myocardium was degenerated and the blood pressure high the surgical risk was very great.

PAROTID TUMOURS.

AT a meeting of the Pathological Section of the Liverpool Medical Institution held on January 20th, with the President, Dr. J. E. GEMMELL, in the chair, after the various specimens were demonstrated and described, Mr. ROBERT KENNON read a paper on tumours of the parotid gland. The material upon which the paper was based consisted of 124 cases of parotid tumour operated upon at the Royal Infirmary, together with pathological reports and slides obtained from Professor E. E. Glynn and the private collections of Mr. Parker, Mr. Paul, and Mr. Thelwall Thomas. On analysis 91 cases were adenomata, 27 carcinomata, 6 sarcomata.

Of the adenomata, in 38 cases the after-histories had been obtained. Out of 32 cases 22 were alive and well, the average duration of each case being eleven years, while another case had died without recurrence seven years after operation; 5 had had recurrence. The tumour was most frequent in females; the average age at onset was 30 years, at operation 37 years—a delay of seven years before surgical aid was sought. Trauma had occurred in 4 out of 29 cases. Pathologically the tumour was considered to be adenoma with mucinous degeneration, and with later regeneration as cartilage. There was no evidence to support the branchial or endotheliomatous origin of these tumours. Recurrence was shown to be due to insemination of the field of operation with fresh cells, which were found to be most active immediately beneath and frequently split the capsule. This was also considered to be the mode of growth during life. The recurrence was immediate in 5 out of 9 known time periods, and averaged one and a half years; and reoperation took place on the average after 5.5 years' delay. Three cases, previously the subjects of recurrence, had reached the five years' limit of cure. No evidence was obtained that operation hastened recurrence or shortened the life of a patient.

Carcinomata were of two types—the spheroidal and the cuboidal celled; 35 per cent. originated in simple tumours. More frequent in females, the malignant change in a simple tumour occurred about the age of 38. Pain, rapid growth, early fixation, and facial paralysis characterized these tumours. Lymphatic glands were involved late.

Sarcomata, round and spindle celled varieties, occurred; the only case traced died five years after the onset of the disease, and two years after operation. Radium had a beneficial effect on certain cases of simple origin.

The seventh ordinary meeting of the Liverpool Medical Institution was held on February 3rd, with the President, Dr. J. E. GEMMELL, in the chair. Mr. THURSTAN HOLLAND read a paper on "Some of the rarer conditions of bones." He showed radiographs of some of the accessory bones of the foot and of the sesamoid bones, and discussed their importance from the point of view of industrial injuries and compensation. Radiographs of six cases were shown in which the bone of Vesalius was present in both feet; and the question was discussed in detail of differentiating between the sesamoid of the peroneus, the presence of a true bone, and epiphyses at the base of the fifth metatarsal. Two cases of Köhler's disease of the scaphoid bone were demonstrated, and radiographs showed the condition at an initial stage and two years later. The paper concluded with a description of an exceedingly rare condition of the patella, in which radiographically there appeared to be an epiphysis on the upper and outer sides of both patellae.

Dr. BALME delivered an address on "Surgical practice in China and recent developments in medical education," and showed a large number of interesting lantern slides.

RADIUM THERAPY.

AT a meeting of the Nottingham Medico-Chirurgical Society on January 5th Dr. STANLEY GREEN of Lincoln read a paper on radium therapy. After a description of the apparatus and the methods which he employed, Dr. Green said that his experience was that primary carcinoma could not be cured by radium, and that where operation was possible the surgical procedure should be carried out; if recurrence took place it could frequently be kept in check by radium, cases of carcinoma mammae being described where this took place. The treatment of carcinoma of the rectal ampulla with radium, after left inguinal colostomy, was also recommended and described, and Dr. Green put forward a plea for the treatment by radium of inoperable cases of carcinoma of the cervix uteri, pointing out that by this means possibly 20 per cent. of these cases would become operable. The favourable results of radium therapy in superficial conditions such as keloid cicatrix, lupus vulgaris, and lupus erythematosus, was emphasized, and Dr. Green mentioned five cases of endothelioma of the nasal septum which had been successfully treated by radium. The treatment of rodent ulcer by radium was strongly recommended as a result of the numerous successful cases of varying dimensions that the speaker had had, while he had treated two cases of cavernous naevi of the face with excellent results.

A CLINICAL meeting of the West London Medico-Chirurgical Society was held at the West London Hospital on February 4th, with the President, Dr. F. J. MCCANN, in the chair. A number of interesting cases were shown by Mr. ASLETT BALDWIN, Mr. B. SANGSTER-SIMMONDS, Dr. BURNFORD, Mr. TYRRELL GRAY, and others. Dr. S. D. CLIPPINGDALE exhibited a walking-stick, now in the possession of the Fagge family, said to be 200 years old, which was of the type used by medical men of the period, containing a phial and measuring glass in its hollow handle and shaft.

Rebiews.

THE CEREBRO-SPINAL FLUID.

IN his monograph[1] on the cerebro-spinal fluid Professor WILLIAM BOYD of Manitoba presents a useful and concise summary of the available knowledge with regard to the physiology and pathology of this important secretion. The origin, course, and destination of the cerebro-spinal fluid are considered in the light of the important experimental work of Leonard Hill, Weed, Dandy, and others. It would seem that the choroid plexus, although the chief, is not the sole source of the fluid; that the quantity in an adult man is probably in the neighbourhood of 120 c.cm.; and that experimental observations on the absorption of dye from the subarachnoid space, and its subsequent excretion into the urine, indicate that the fluid can be replaced four or five times over in the twenty-four hours.

Factors that are known to influence the flow are next considered, and attention is drawn to the interesting observation of Dixon and Halliburton that certain substances, such as extracts of brain or choroid plexus, act as cerebral "lymphagogues," probably through the action of a special hormone. Even more important, however, is their observation that excess of carbon dioxide in the blood causes an increase in the flow of the cerebro-spinal fluid. This is the probable explanation of a fact observed during the late outbreak of cerebro-spinal fever, namely, that far more cerebro-spinal fluid may be obtained when lumbar puncture is performed under a general anaesthetic than is the case without one. Possibly, as Professor Boyd suggests, the increased flow under such conditions is brought about by the circumstance that the cerebro-spinal fluid is a means whereby carbon dioxide is rapidly excreted from the blood; hence, when under the anaesthetic the blood content of carbon dioxide rises, the flow of cerebro-spinal fluid is stimulated.

It would appear that comparatively few substances pass from the blood into the cerebro-spinal fluid. This impermeability of the choroid, however, is not quite complete. According to Professor Boyd, alcohol, chloroform, and acetone are allowed ready passage. Whether urotropin can pass through is disputed. On the contrary, substances injected into the cerebro-spinal system are rapidly absorbed into the blood, and may appear in the urine within twenty minutes. Even more striking than this rapidity of absorption from the cerebro-spinal fluid is the amount of fluid that can be absorbed by that route. Professor Boyd directs the attention of therapeutists to the fact that "anything up to a litre of normal saline may be run into the subcerebellar cisterna of a dog, and absorbed in the space of one or two hours." The greater part of this absorption appears to take place from the cranial subarachnoid space.

The changes undergone by the cerebro-spinal fluid in disease are thoroughly dealt with, and we note with approval that the author makes full reference to the work of British observers in this field. Amongst other things, attention is drawn to the valuable evidence to be obtained in cases of

[1] *Physiology and Pathology of the Cerebro-spinal Fluid.* By William Boyd, Professor of Pathology, University of Manitoba; Pathologist, Winnipeg General Hospital. New York: The Macmillan Company. 1920. (30s. net.)

suspected uraemia by measuring the urea content of a sample (5 c.cm.) of cerebro-spinal fluid, and also to the recent demonstration by Canti of the value of this procedure for distinguishing certain cases of cardiac disorder clinically closely simulating uraemia from the true condition. It would seem to be established that measurement of the amount of urea in the cerebro-spinal fluid is not only of practical importance in the diagnosis of uraemia, but, further, that, as Mestresat first pointed out, the quantity of urea found there during an attack of uraemia is a good guide to prognosis.

We can cordially recommend this monograph, which satisfies a distinct want and provides an excellent synopsis of a subject of increasing importance. The subject matter is well set out, the book is clearly written, and its value is greatly enhanced by the fullness of the references. The only criticism that we have to make is that reference to work done in this country on the specific therapy of cerebro-spinal fever during the recent outbreak is lacking: a defect that doubtless will be remedied in future editions.

GOUT.

To write a comprehensive and intelligible account of gout is a difficult task, and, indeed, is probably harder now, on account of the greater accumulation of data without a corresponding justification for dogmatism, than at the time when the treatises of Sir Alfred Garrod (1859) and Sir Dyce Duckworth (1890) appeared; with them comparison must inevitably arise. In his pleasantly written volume on *Gout* Dr. LLEWELLYN JONES LLEWELLYN[2] has succeeded in providing the reader with a fair and well-proportioned account of the very varied views of other workers, past and present, and at the same time has made his convictions, derived from much experience at Bath, quite clear. The theoretical and the practical considerations are skilfully balanced, but the practising physician rather than the laboratory worker appears to be the directing spirit, as, indeed, should be the case.

After a review of the chemistry of gout, the weight of clinical evidence is shown to be against the primary renal origin of gout; and in the section on uricaemia full advantage is taken of the results from Folin and Denis's colorimetric method of detecting uric acid in the blood, and of McLester's figures showing the uricaemia of normal persons and in various diseases. Contrary to what might be expected, there is not any constant relation between uricaemia and uratosis or the presence of tophi; Dr. Llewellyn believes that formation of tophi is preceded by a local inflammatory reaction of varying severity, and that, as uric acid and its precursors are non-toxic, the tophi are the result and not the cause of the inflammation. He is a strong advocate of the infective theory of gout, and insists that inflammatory reaction invariably precedes all gouty processes, articular and ab-articular, the inflammation being due to infection or subinfection which may be of various kinds and is therefore not specific. Local foci of infection, such as oral sepsis and tonsillitis, are extremely common in the gouty, and thus cause the arthritis; further, the probable diminution of rheumatic fever since tonsillectomy has come into vogue is compared with the increasing rarity of gout which synchronizes with the more general treatment of oral sepsis. The gastro-intestinal disorders which chequer the course of gout increase the pathological activities of the intestinal flora and incidentally the liability to infection at various sites of the alimentary canal. The author holds that it is not the quality but the quantity of food that is responsible for gout, by producing a toxic condition of the blood plasma and so lowering the resistance of the individual to microbic invasion; alcohol and lead, which do not produce gout in the absence of an hereditary proclivity, similarly act by impairing the protective mechanisms of the body and so favouring infection, especially from the gastro-intestinal tract. Mr. W. M. Beaumont contributes a chapter on ocular disease in the gouty, and, after full discussion of the late Sir Jonathan Hutchinson's views on iritis, concludes that it is unwarrantable to speak of gouty ocular disease, for there is nothing in the character of the inflammation specific of gout.

In his full clinical account of the disease Dr. Llewellyn points out that gout disposes to fibrositis by favouring infection, that acute gout is not infrequently complicated by fibrositis, and that the same infection sets up these two changes. A very definite view is expressed about irregular and retrocedent gout; there is no anatomical evidence of gouty inflammation in the viscera, and the gastro-intestinal disorders, such as dyspepsia and acidity, attributed to gout, are in reality etiological factors and not symptomatic manifestations of that disease; the cases of so-called "retrocedent" gout to the heart or the brain are usually due to myocardial degeneration, arterio-sclerosis, or renal disease.

The section on the important subject of treatment bears witness both to the author's practical experience and to his sense of proportion. Commencing with the radical treatment of local foci of infection or toxic absorption, stress is laid on the importance of being on the look-out for more than one such focus; thus oral infection may be associated with tonsillar, aural, cholecystitic, or appendix infection. With regard to diet, it should be remembered that each gouty subject is a law unto himself and that it is the individual and not the uric acid that must be treated. The dietary should not be stereotyped, but should be directed to obviate dyspepsia and promote asepsis of the alimentary tract. With regard to the relative claims of colchicum and atophan, the author points out that the vegetable drug influences the real cause of the arthritis, whereas the synthetic product promotes absorption and elimination of the resulting uratic deposits, and should therefore be given after a paroxysm in order to prevent tophaceous formations.

DISEASES OF THE LUNGS AND PLEURAE.

THE nine years that have elapsed since the date of the last edition have necessitated many changes in the sixth edition of the well known work *On Diseases of the Lungs and Pleurae*[3] by Sir R. DOUGLAS POWELL and Sir P. HORTON-SMITH HARTLEY. New chapters have been added on chylothorax, massive collapse of the lung, sporotrichosis, and artificial pneumothorax; the section on haemothorax has been supplemented by an account of haemothorax following wounds of the chest, thus summarizing the British experience gained during the war. Reference is duly made to the four types of pneumococci established at the Rockefeller Institute, and to the value of the anti-pneumococcic Type I serum in cases proved to be due to this type. It would be interesting to know if this form of differential treatment has been attempted in this country, and if the authors have had any personal experience of it; they have, however, employed pneumococcic vaccines in many cases of pneumonia without any well-marked beneficial effect, and sensitized (preferably autogenous) vaccines with perhaps more encouraging results. The rather condensed account of bronchopneumonia contains a reference to mustard-gas poisoning. The description of influenzal pneumonia might perhaps have contained some reference to W. G. MacCallum's splendid monograph on the pathology of the pneumonia in the United States Army Corps during the winter of 1917–18. The anaphylactic origin of asthma and the recent work of Drs. John Freeman and Chandler Walker find a place, and a wise caveat is entered as to the use of therapeutic serums in asthmatic subjects.

The description of pulmonary tuberculosis occupies two-fifths of the volume, and reflects the mature and wide experience of the authors; many additions, such as Professor Karl Pearson's and Dr. John Brownlee's work on epidemiology, have been made, and new observations and views are submitted to careful criticism. Hilum tuberculosis is regarded as an unnecessary addition to nomenclature, as in the adult there is reason to doubt the correctness of the statement that tuberculosis spreads continuously outwards from foci at the hilum; tuberculosis of the glands in the hilum is of course well recognized, but this is not the form of disease to which the term is usually applied. The remarks on tuberculin have been considerably curtailed in accordance with the opinion that, except in special cases, less value than formerly can

[2] *Gout.* By Llewellyn Jones Llewellyn, M.B.Lond.; with a Section on Ocular Disease in the Gouty by W. M. Beaumont. London: William Heinemann (Medical Books), Ltd. 1920. (Roy. 8vo, pp. 487; 1 plate. 30s. net.)

[3] *On Diseases of the Lungs and Pleurae.* By Sir R. Douglas Powell, Bt., K.C.V.O., M.D., etc., and P. Horton-Smith Hartley, C.V.O., M.D., F.R.C.P. Sixth edition. London: H. K. Lewis and Co., Ltd. 1921. (Demy 8vo, pp. 818; 65 figures, 36 plates. 42s. net.)

be attached to its use; and, in speaking of the dosage, the cubic millimetre, as suggested by Drs. Morland and Riviere, is employed, instead of the cubic centimetre. In conclusion, this familiar work, which is only some fifty pages longer than the last edition, can confidently be recommended as a safe guide to the practitioner in search of authoritative medical opinion in this country at the present time.

MACEDONIA.

PROBABLY it is true to say that, as the authors of *Macedonia: A Plea for the Primitive*[4] would imply, less is generally known of Macedonia, its peoples and their customs, than those of any other part of Europe. This is true in spite of the fact that a British force was in occupation of the southern parts for three years, and that over 400,000 men passed through that force. For the majority, however, the opportunities of observation were very limited; the authors of this book were more fortunate, and appear to have visited nearly all parts of the country, among others Mount Athos and some of its monasteries, which can have changed but little since Curzon wrote his great book. The volume is not arranged after the manner of a guide-book, but according to subjects; thus there are chapters on native dress, on villages and houses, on the products, among which tobacco and dried fruit (currants) are probably the most important; on the Greek Church and the Turkish mosque, and on marriage customs. Agriculture is in a primitive stage. Threshing is carried on by a method which we have not hitherto seen described: corn is laid out on the threshing floor "to a depth of an inch or more, and large pieces of wood, like flat toboggans, set underneath with sharp projecting flints, are dragged over it by donkeys, ponies, or oxen." The flints, it is stated, are chipped after the prehistoric manner; this is very possible, for the last of the East Anglian flint-chippers died only a few years ago. Three chapters are given to Salonica, the last describing the great fire which destroyed the larger part of the city in August, 1917. The pleasure of reading the book is greatly increased by Dr. H. A. FAWCETT'S drawings, four in colour, and many in black and white. The text, we gather, is by Mr. A. GOFF, whose style is rather unusual. "Simplicity is Nature's first step and the last of Art" is taken as a motto, and there are many references to it, but the author does not seem to have taken it to heart. Again, such a phrase as "a full conception of the degree of prolixity which it [insect life] attains" seems to need reconsideration.

NASAL ANATOMY.

DR. SCHAEFFER, in his monograph on *The Nose, Paranasal Sinuses, Nasolacrimal Passage-ways and Olfactory Organ in Man*,[5] has presented an elaborate survey of the anatomy of these parts in the widest sense of the word. The author has been impressed with the unfortunate results of teaching students of anatomy one rigid description as the typical form of each region, organ, and structure in the body. Some general instruction of this nature is clearly necessary to form an elementary understanding of anatomical structure, but the author very wisely emphasizes the fact that a series of dissections soon shows that there is no fixed and unalterable type in many parts of the human body. Students, however, are very apt to acquire the idea that any deviation from an arbitrary standard constitutes an anomaly, whereas it would be almost impossible to find a body that answers in every detail to the typical form, which is a kind of average taken from a large number of specimens. In the nose wide departures from the composite anatomical standard are particularly frequent. The present volume is of value, both in establishing this general idea and also in describing the large number of structural variations which occur, and in tracing the developmental origin of their production. An excellent example of this is furnished by the variations in the nasolacrymal ostium, which the student usually conceives as an opening guarded by the valve of Hasner. The clinical value of such anatomical knowledge, especially when based on a sound general conception, cannot be overestimated. The chapters which concern the accessory sinuses, and especially the section dealing with the frontal sinus, are very good and of great practical value.

The work is founded on the author's observations and researches; he is sparing in his references to other publications, and has not attempted a general survey of the literature of the subject; nevertheless the book is sufficiently comprehensive. Some rather doubtful matter on the physiological relations of the nose to other parts has been introduced, presumably for the sake of completeness. The book, however, is one which well repays close study, and for anyone interested in the numerous anatomical problems connected with the nose and its accessory sinuses the illustrations are in themselves an education.

THE TRIAL OF THE WAINWRIGHTS.

THE "Notable English Trials" series appeals in a double sense to medical men, first to their professional interest in medico-legal problems and then in respect of human nature and its manifold twists and unexpected features. A good detective story usually has a peculiar attraction to a mind trained to track out the origin and course of morbid function, and this series shows how greatly fact may exceed fiction in its surprises and fascination. The twenty-fourth volume of this series, *The Trial of the Wainwrights*, edited by the late H. B. IRVING,[6] who also brought out the volumes on Franz Müller and Mrs. Maybrick, is an admirable case in point. In the introduction the editor has graphically sketched the murder of his paramour Harriet Lane by Henry Wainwright, the brushmaker of the Whitechapel Road, in 1874, his successful concealment of her remains for a year, their dramatic discovery when he moved them to what would have been a safer hiding place, his trial in company with his brother Thomas, and his execution. As some will remember, the body was originally buried with chloride of lime, which preserves rather than destroys human remains, and so led to the murderer's undoing when, a year later, the boy to whom Wainwright entrusted the grim parcel, found to his horror a human hand, and straightway communicated with the police.

Wainwright was not the first nor the last man to commit murder in order to preserve a respectable reputation, and an interesting comparison is drawn between him and John Tawell the quaker, John Beale, and Cadwallader Jones, like him married men who murdered their mistresses, and his namesake "kind light-hearted" Thomas Griffith Wainewright, the friend of Charles Lamb. The full evidence of the later trial is illustrated by photographs of Henry Wainwright and some of the eminent counsel concerned. The very natural interest felt in the talented editor has been happily satisfied by an admirable appreciation from his friend Sir Edward Marshall Hall, who gives much interesting information about his criminological methods, and says: "If it had not been his fortune to be the son of a great actor and a great actor himself he might have earned fame as a great advocate, but his was the better rôle."

NOTES ON BOOKS.

SIR D'ARCY POWER has published his second Vicary Lecture on *The Education of a Surgeon under Thomas Vicary*,[7] with many interesting illustrations. The lecture shows how much the education of a surgeon owes to the wisdom of a few great men in the critical times with which it deals, when the fraternity of surgery could no longer continue along the traditional lines and there was a real danger of surgery passing into the hands of a trade guild. An abstract of the lecture was given in our issue of November 13th, 1920.

We are indebted to the Registrar of the General Medical Council for a copy of the new edition of the *Report as to the Conditions under which Medical and Dental Practitioners Registered or Legally Qualified in Their Own Country may*

[4] *Macedonia: A Plea for the Primitive.* By A. Goff and Hugh A. Fawcett, M.R.C.S. With illustrations by Hugh A. Fawcett. London: John Lane, the Bodley Head; New York: John Lane Company. (Med. 8vo, pp. xxi + 274; illustrated. £1 1s. net.)

[5] *The Nose, Paranasal Sinuses, Nasolacrimal Passage-ways, and Olfactory Organ in Man. A Genetic, Developmental, and Anatomico-Physiological Consideration.* By J. Parsons Schaeffer, A.M., M.D., Ph.D., Professor of Anatomy at Jefferson Medical College, Philadelphia. Philadelphia: P. Blakiston's Son and Co. 1920. (Demy 4to, pp. 387: 203 figures. 10.00 dols.)

[6] *Trial of the Wainwrights.* Edited by H. B. Irving, M.A.Oxon., with an appreciation of the editor by Sir Edward Marshall Hall, K.C. Edinburgh and London: William Hodge and Co., Limited. 1920. (Demy 8vo, pp. 235. 8 illustrations. 10s. 6d.)

[7] *The Education of a Surgeon under Thomas Vicary.* By Sir D'Arcy Power, F.R.C.S. Bristol: Wright and Sons, Ltd. (Crown 4to.)

Practise Abroad.[8] The first edition was issued in January, 1910, and a revised and expanded edition in August of the same year. The report is founded either on answers received from the authorities of the several countries or on information in the possession of the General Medical Council. The new, fifth, edition has been brought up to date, and British practitioners who are thinking of going abroad will find in this volume the most comprehensive and accurate information available as to the conditions of practice in other countries. Requirements, however, are liable to change, and the registrar, Colonel Norman C. King, has been careful in all cases to supply the name of the official from whom the necessary forms and latest details can be obtained. This very necessary precaution should always be taken.

Under the auspices of the Carnegie Endowment for International Peace a valuable series of economic studies of the war is being published, under the general editorship of Dr. David Kinley, professor of political economy in the University of Illinois. It includes such subjects as the early economic effects of the war on Canada, Chile, and Peru, the financial history of Great Britain in 1914–18, British war administration, negro migration during the war, the Germans in South America, Government war contracts. The volume now received is on prices and price control in Great Britain and the United States during the world war,[9] and is by Dr. SIMON LITMAN, professor of economics in the University of Illinois. His study of the question shows that legal action on the whole has had little effect in preventing or removing the evil practices that have called forth so much popular denunciation; and the author has included detailed discussions, of much interest, on such matters as causes of the rise in prices, profiteering, and industrial unrest. Although each generation, like each individual, must learn in large measure from its own experience, nevertheless there are in every age some minds able to exert an influence in a new crisis in the direction of sanity and safety by their studies of similar experiences in the past; and to that extent this and other volumes of the series will, it is hoped, have a permanent value.

In *Lays by the Way* Dr. R. B. GREAVES[10] of Sheffield has joined the ranks of medical men who have found expression for their experiences in verse. In the twenty-one short poems there are many touches that will appeal to his silent brethren, particularly that entitled "The Doctor."

[8] Constable and Co., Limited. Price, 2s. 6d.; post free (U.K.) 2s. 9d.; Colonies, 3s.; abroad, 3s. 3d.

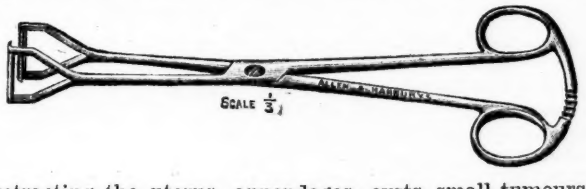
[9] *Prices and Price Control in Great Britain and the United States during the World War.* By Simon Litman. New York: Oxford University Press, American Branch. 1920.

[10] *Lays by the Way.* By R. B. Greaves. London: Erskine MacDonald, Ltd. 1921. (Cr. 8vo, pp. 72. 3s. 6d. net.)

APPLIANCES AND PREPARATIONS.

Modified Duval's Lung Forceps.

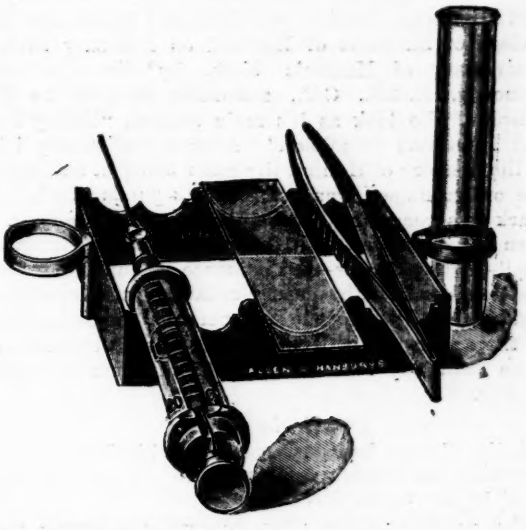
MR. BRYDEN GLENDINING, M.S., F.R.C.S. (Aspley Guise, Beds), writes: When using Duval's special lung forceps in chest cases during the war I was agreeably impressed with their extremely sensitive and at the same time assured, non-slipping grip, and came to employ them largely in abdominal surgery, where their tenacious but delicate hold proved invaluable, notably for holding or



retracting the uterus, appendages, cysts, small tumours, and even gut, when applied over gauze. The original model has a triangular head, of which the angles are too prominent and the bite wider than necessary. Messrs. Allen and Hanburys have therefore modified it for me by removing the sharp angles of the jaws, increasing the length of the instrument, making it more suitable for deep abdominal work, and fitting the bowed end lock, which prevents sutures getting caught up between the finger rings as in the ordinary pattern of forceps.

A Tray for Tuberculin Administration.

Mr. F. E. GUNTER (London, W.C.) writes: Finding the need of a simple rest or tray for the impedimenta which one uses in giving tuberculin injections, I have designed the tray shown in the accompanying illustration. Such an appliance should be simple, stable, and easily rendered aseptic; the tray will be found to meet these requirements. Dr. H. A. Ellis has suggested to me that it would



be of more value to laboratory workers if the spaces were adapted to hold slides and if a holder for test tubes were added, and these alterations have been made. The tray has been made to my design by Messrs. Allen and Hanburys, Ltd., 48, Wigmore Street, London, W.1.

ROYAL MEDICAL BENEVOLENT FUND.

AT the meeting of the Committee held on February 8th seventeen cases were considered, and £245 voted to fifteen applicants. The following is a summary of some of the cases relieved:

M.R.C.S.Eng., aged 80, married. Suffers from facial neuritis following paralysis. Dependent on daughter, who supplements her income by taking paying guests. Applicant receives the old age pension. Voted £13.

M.B., C.M.Edin., aged 67, married. Asks for help to meet expenses. Stepdaughter, aged 45, dependent owing to deafness since birth. Wife takes boarders to supplement income. Has had to sell furniture to make ends meet, and within the last twelve months has paid off £100 for debts. Rent and rates £69 per annum, amount owing £36. Voted £26 in twelve instalments.

Daughter, aged 70, of M.R.C.S. who died in 1878. Applicant used to receive £100 per annum from friends, but this sum is no longer available, and her niece who looked after her has now to help her own aged mother. Old age pension is being applied for. Voted £26 in four instalments.

Widow, aged 44, of M.B., C.M.Glasg. who died in 1909. Applicant left with three children. She acts as a companion help at £60 per annum. Her eldest son is self-supporting, but she has to pay part of board for second boy, aged 17, who is an engineer's apprentice. Asks for help to meet expenses. Voted £20 in four instalments.

Daughter, aged 47, of M.R.C.S.Eng. who died in 1908. Owing to ill health she is entirely dependent on her mother, who receives a pension from the fund. Relieved once, January, 1920, £12 in twelve instalments. Voted £12 in twelve instalments.

Widow, aged 54, of L.S.A.Lond. who died in 1911. Applicant has a cottage in Cornwall, and earns money by taking boarders and running a tea garden, but owing to bad weather has been unable to meet expenses. Applicant has to find £2 per week for her two sons. Rent and rates £12 per annum, and assurance £18 per annum. Relieved four times, £35, last time January, 1919, £10. Voted £10.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, K.B.E., C.B., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild is overwhelmed, in these days of exorbitant prices for clothing and household necessaries, with applications for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles for the benefit of the widows and children who in happier times would not have needed assistance. The gifts should be sent to the Secretary of the Guild, 43, Bolsover Street, W.1.

MESSRS. OLIVER AND BOYD announce for early publication a third edition (rewritten and greatly enlarged) of *The Clinical Study and Treatment of Sick Children*, by Dr. John Thomson.

AT the request of the League of Red Cross Societies a large typhus research hospital will be established in connexion with the new American Red Cross Hospital recently opened at Wilmo.

ASTLEY COOPER AND HUNTERIAN PRINCIPLES.

SIR CHARTERS SYMONDS'S HUNTERIAN ORATION.

THE Hunterian Oration was delivered before the Royal College of Surgeons of England on February 14th, the anniversary of Hunter's birth, by Sir Charters J. Symonds, K.B.E., C.B., consulting surgeon to Guy's Hospital, who took as his main subject, "Astley Cooper and Hunterian principles." After a preliminary tribute to the memory of Hunter, the great biologist and surgeon, the orator named some of Hunter's pupils who left their mark on surgery and became teachers in the schools. He then set out to trace in the career of one distinguished pupil—Astley Cooper—the influence of Hunter's teaching, and to show how the principles laid down were expanded and applied by one who was, perhaps, the best exponent of the application of Hunter's teaching and one who did more than any other surgeon of his time to stimulate inquiry.

Early Career.

Astley Cooper had just completed his 16th year when he arrived in London in August, 1784, to become apprenticed to his uncle, Mr. Cooper, at that time surgeon to Guy's Hospital. He soon became a favourite in the household of Mr. Cline, where he lived, and shortly afterwards, at his own request, he was transferred as apprentice to Cline, a circumstance that had a far-reaching effect on his future. Cline, aged then about 38, was a surgeon at St. Thomas's Hospital; he was a follower of Hunter, carried out his principles and his teaching, followed his experimental methods, was a good practical surgeon, and a man of sound judgement. At Cline's suggestion, no doubt, Astley Cooper began attendance at Hunter's lectures, and had the priceless advantage of talking over the subject with his master and with other apprentices, one of whom interested him in botany and another in physiology. In his indentures it was provided that he might spend a session in Edinburgh, and thither he went in October, 1787. He carried introductions to the leading professors, whom he was anxious to see and hear. He was by this time a good anatomist, and moreover had spent much time at the bedside and had made careful notes of the cases, so that he was in a position to discuss both anatomical and surgical questions. From his frank and courteous manner, free from assertion, he was well received, and was made a member of the famous Royal Medical Society, and offered the presidency should he return. He made good use of these seven months, spending his time in the infirmary, making notes of the cases, and attending lectures by Monro and others. At Edinburgh he learned order and system, for which the teaching has always been famous, and under this guidance he planned a method of examining cases of disease which led to the surest and safest mode of forming a diagnosis, and this he pursued throughout his life, to the advantage of his teaching and his practice.

In 1789 Astley Cooper was appointed demonstrator of anatomy at St. Thomas's, and two years later (at the age of 23) he was asked by Cline to take a share in the lectures on anatomy and surgery. Hitherto the subjects of anatomy and surgery were combined in the same lectures, a plan which Astley Cooper considered injurious to both. After some hesitation Cline agreed to their separation. Cooper now resolved to devote the next three years solely to improving his knowledge of anatomy and surgery, without endeavouring to amplify his income from the lectureship by seeking private practice. Disappointed to find that the class at his first course of lectures was inattentive and decreasing in numbers, he concluded it was necessary for his pupils to have a considerable knowledge of surgery before they could comprehend the principles enunciated by Hunter. He at once changed his method, and with immediate success. Cases of disease and injury were brought before the class, the cause and nature of the disease or accident described, with the appropriate treatment, and afterwards the physiological and pathological bearings applied and further illustrated by morbid specimens and experimental results. This method he pursued throughout his forty years, enriching his lectures with cases from his own experience, and as this widened the lectures became more and more valuable. But never did he lose sight of the scientific side or relapse into the method of earlier lecturers, who dealt with cases only. Always inquiring by dissection, by study of disease in the living and the dead, and by experiment, he was constantly improving his teaching. The lessons to be learnt from such vast inquiry were brought to the service of his class, and each year further light was thrown upon old subjects, and not from second-hand knowledge, but from the actual observation of the teacher himself.

So successful had his lectures become in his second course that when he began the third in 1793 the number of entries had doubled. In this year, at the age of 25, he was appointed lecturer at Surgeons' Hall. To improve further the education he very soon after his appointment promoted a society, confined to the pupils of Guy's and St. Thomas's Hospitals, where cases of interest were shown and discussed. This existed for several years, and was of particular value to the younger men, for the discussions at the Physical Society were beyond the range of any but the senior members of the schools. In a word, he devoted the first three years to the welfare of the students, and when one adds his personality, the buoyant spirits, the sense of humour, the hearty laughter, his readiness to help in their work, and his kindly advice and often assistance in more substantial ways, is it any wonder that he was sought after as a teacher and beloved as a friend? For nine years he continued these demonstrations and lectures, pursuing without intermission his studies in anatomy, comparative anatomy, and physiology. He had gradually obtained private practice, and by the end of the period his income from this source was said to amount to £1,000. In 1800 he was appointed surgeon to Guy's Hospital, thus securing the acme of his ambition at the age of 32. He was well equipped for the position, for though he could not have performed many operations, he had acquired from his dissections such a knowledge of anatomy as would enable him to work with accuracy and speed, and from his experiments on animals a refinement of technique not possessed by any of the other competitors.

Inquiry by experiment and the acquisition of dexterity by operating on animals is (Sir Charters Symonds continued) unfortunately restricted in our country to an extent that has for long checked advance in surgery. Operation on the dead cannot compare with that on the living, even if only on one of the lower animals. In the days of Astley Cooper, when anaesthesia was unknown, time was of the essence of success and of mercy. It was said by one of his colleagues that Astley Cooper could operate as well with an oyster knife as another surgeon with the best out of Landry's shop. This raises the important question of operations on living animals as part of the training of a surgeon. In certain branches of surgery this would be most valuable, and in one at least —operations on the brain—it seems essential. Harvey Cushing, than whom no better authority could be quoted, urges this practice in a recent essay. To learn how to arrest haemorrhage, to handle the brain without injury, to trephine a thin bone without harm to the meninges, to expose any given part by the most direct route, are steps in technique which should be acquired before operating on the human subject. Take, again, operations on the eye, intestinal suturing, or, more important still, suture of the common bile duct and of the ureter, and the suture of arteries—will anyone deny that to approach such operations after adequate practice on living animals cannot but lead to better technique and greater success? Is it not in the interest of the public that facilities should be given to those preparing for important surgical positions to acquire such experience, especially when anaesthesia removes all reasonable objection?

Astley Cooper as Teacher and Surgeon.

Astley Cooper was undoubtedly a great teacher, and in this regard probably had a wider influence than anyone of his time. He no doubt possessed a natural gift for teaching, but this would not have gained him the position he obtained in this respect had it not been for his industry and his determination to enunciate no doctrine unless proved by observation and experiment. He was not a

genius in any sense, and he himself attributed his success entirely to his industry. He had clear ideas as to how knowledge should be acquired, and constantly impressed upon his class the importance of personal observation. He recognized the evil effect of too much teaching, and inculcated personal observation of the processes of Nature.

As a surgeon Astley Cooper's name will always be associated with the ligature of arteries, for he it was who first put a ligature on the carotid; he was one of the earliest to tie the external iliac, and the only surgeon of his time to ligature the aorta. From his earliest days as an apprentice, and all through his life, he carried on experiments of all kinds, and to him was largely due the demonstration of anastomotic circulation. Hunter had ligatured the femoral for the cure of popliteal aneurysm in 1785, when Astley Cooper was in the first year of his apprenticeship to Cline. No doubt master and pupil talked over the revolution in surgery which had saved so many lives, and saw the application of the principle to other situations. During the years that followed he tied all the main vessels in dogs and other animals to prove the truth of the anastomotic circulation. Both carotids were held to be essential to the integrity of the brain in man and animals. The fallacy was soon dismissed as far as dogs were concerned, for he tied both vessels simply and simultaneously without ill effects, and later combined ligature of both carotids with double ligature of the vertebrals. This was generally fatal, but one dog at any rate survived. The performance of such a feat in half an hour was a tribute to the operator's accurate anatomy and technical skill. It was his custom also to ligature the carotid at his lectures to demonstrate the safety as regards the brain. It was, however, generally considered that such an operation in man was "impracticable or would be injurious to the functions of the sensorium." Cooper, however, had found a case where one carotid had been obstructed by disease, and Dr. Baillie had communicated an example of complete obstruction of one and partial of the other carotid without ill effects. The defence of the operation put forward by Travers after his own operation shows the controversy that existed, and emphasizes the boldness of Cooper's undertaking.

The opportunity long anticipated at last arrived, and it was on November 1st, 1805, that he ligatured the common carotid in a woman. It was an advanced case of aneurysm, and occupied so large a space that it was just a question whether there was room for a ligature between the sac and the clavicle. In the skilled hands of Astley Cooper, however, that was accomplished which few would have attempted. The patient died from suppuration of the sac twenty days later. Astley Cooper was not discouraged, for he had established two points: that the carotid could be safely tied and without injury to the brain. In reading the account before the Medico-Chirurgical Society on January 29th, 1806, he says: "The failure was due to the operation being too long delayed, and it will not prevent my performing it in any case in which the disease is somewhat less advanced." It is not difficult to imagine the criticisms that would be levelled by those who thought such an operation unjustifiable.

The second opportunity came on June 22nd, 1808, and was a complete success. In reading this case before the same society reference was made to experimental ligature "many years ago." On the death of this patient, thirteen years later from apoplexy, the brain was obtained, and a drawing is given in *Guy's Hospital Reports*, vol. i. Both these operations were carried out in the presence of several surgeons of the hospitals and some visitors, and one cannot but admire the courage of the operator's convictions. In both instances examination showed that no injury had been sustained by neighbouring structures. On the same day on which the second operation took place he ligatured the external iliac in an urgent case in which rupture was imminent. Eighteen years later the specimen was obtained at considerable expense and trouble, for the man lived in the country.

Finally came the culmination of this work in the ligature of the aorta. The operation was performed on June 25th, 1817, by the transperitoneal route. In referring to his experiments, when reading the paper on ligature of the carotid, he says: "Lastly, I was anxious to ascertain when even the aorta was tied if the blood would still find its course by anastomosis." This he had demonstrated in dogs, and had repeated the experiments two years before—that is, in 1815. "The animal," he says, "survived the experiment and maintained his usual health." Again it was unfortunate that the case was an advanced one, and the man greatly reduced by haemorrhage. The aneurysm was of immense size and filled the left iliac fossa; operation by the route adopted on animals was impossible, and he determined, rather than that the man should be left, to open the abdomen, displace the intestines, and secure the artery above the bifurcation. With his usual solicitude he explained the position to the patient, who replied, "Sir, I leave myself in your hands." With that dexterity which was the outcome of his experimental inquiries, he then placed the ligature, without, as it proved, any injury to other structures. Though the man lived only forty hours the right limb had recovered its warmth and sensation, but the left—the affected side—remained cold and discoloured. This he considered was due to the pressure of the large aneurysm interfering with the anastomosing vessels.

Thus he had broken new ground, had thought out the details of possible operations, had by experiment on animals proved that so far as they were concerned success was obtained, and therefore might be anticipated in man. "The secret of success in life is for a man to be ready when his opportunity comes."

Hunter and Cooper.

The portrait by Sir T. Lawrence (concluded the Orator) exhibits Astley Cooper somewhere approaching 60, and is considered the *chef d'œuvre* of this great painter. It is interesting to compare it with that of Hunter; both are looking up and into the future, both see much to be done—Hunter the philosophic genius, and Cooper his great pupil, ready for any emergency. Both Hunter and Astley Cooper fully gave of their knowledge to others, and were not concerned who discovered the truth so long as it was found. Truth to them was bigger than person or school.

Cooper died in 1841 at the age of 74, having extended and upheld the reputation of British surgery for half a century, and was buried beneath the chapel of the hospital he loved so well and whose fame he did so much to extend. By his will he founded a triennial prize, and it is significant that he directed that the first subjects for inquiry should be upon the thyroid, the spleen, the thymus, the suprarenal capsules, and the state of the blood and blood vessels in inflammation—all subjects on which he had himself made observations and conducted experiments. He foresaw that future workers, better equipped, would unravel the secrets which had baffled him. The Hunterian era awoke in the minds of men a desire to explore the old ground by new methods and to unearth the truths so long concealed. There was a spirit of adventure like that which animated the Elizabethan explorers, the ambition of the healthy human intellect to extend its range of vision and knowledge. To Hunter belongs the credit of the discovery of this new world. He it was who lighted the torch, and I hope I have shown that Astley Cooper was amongst those who first carried it forward in the race, kept it alight, and then passed it on not only undiminished, but burning with a brighter flame; and so when his course was run the goal was nearer for the part he had taken. "After brief life men die, and like runners in a race hand on their torch to another."

AT the meeting of the London County Council on February 15th, Captain Swinton moved that it be an instruction to the Education Committee forthwith to confer with the Improvements and Building Acts Committees on the question of a site at Holland Park for the University of London, and to report fully to the Council thereon. By the standing orders of the Council no speeches are allowed on motions involving references to committees, and this motion, was accordingly passed without any discussion; the discussion will be forthcoming when the Education Committee reports. Captain Swinton, with the consent of the Council, withdrew a part of his motion which included reference to the availability at Holland Park of a site of ample size and convenient situation, and purchasable at a capital cost considerably less than that of the far smaller site at Bloomsbury.

British Medical Journal.

SATURDAY, FEBRUARY 19TH, 1921.

INTESTINAL PROTOZOA ENDEMIC IN BRITAIN.

PROGRESS in our understanding of the part played by pathogenic micro-organisms and their significance involves observations in at least two different directions. In the first place evidence is required of a causal relationship between a given micro-organism and the particular disease in constant and intimate association with which it is found to occur. Such causal relationship having been established, the next step is to determine the distribution of this pathogenic micro-organism in the absence of the disease; and it is to systematic work in this direction that we owe important advances in our knowledge of the genesis of epidemics, and also the comparatively modern appreciation of the part played by the healthy carrier in the conservation and transmission of infection.

Before the war the study of intestinal protozoa in the inhabitants of Great Britain was neglected. As Mr. Clifford Dobell, F.R.S., points out in a recent report[1] to the Medical Research Council, while a knowledge of protozoology was recognized as a requirement of physicians devoting themselves to tropical medicine, there were few medical men at that time who were able—or if able who saw the necessity—to study the intestinal protozoa of the resident population of Britain. This defect Mr. Dobell sets himself to remedy in the present report, wherein he describes and analyses with much care and skill, observations on the subject in question carried out by himself and his pupils and colleagues. Of the 3,000 examinations with which he deals, over 2,000 were made at Liverpool, the remaining 1,000 being carried out at Birmingham, Brighton, Leeds, Sheffield, and Reading. None of the 3,000 persons whose faeces were examined had ever been out of Great Britain, and they included children as well as adults, hospital patients, asylum patients, occupants of sanatoriums, and also recruits.

The particular protozoa of which a census was taken in this way were eight in number—namely, *Entamoeba histolytica*, the parasitic cause of amoebic dysentery, *E. coli* and three other non-pathogenic amoebae, *Lamblia* and two other flagellates. Although they differed in frequency, all of these protozoa were detected in the intestinal contents of "indigenous" inhabitants of Great Britain. It would appear that the commonest is the harmless *E. coli*, which, in Mr. Dobell's opinion, is probably present in the intestinal contents of 50 per cent. of the inhabitants of this country. Next in frequency is *Lamblia*, the carrier rate of which he puts at from 18 to 27 per cent., this protozoon being especially frequent in the faeces of children. Chief interest, however, centres round the observations with regard to *E. histolytica*. This particular protozoon was actually identified in 3.4 per cent. of the persons examined, but, for reasons stated by him, Mr. Dobell considers that the true rate is between 7 and 10 per cent.

The first question that this highly interesting observation raises is whether the amoebae identified with *E. histolytica* are all indistinguishable pathogenically from that micro-organism, or whether at any rate a proportion of them while closely resembling *E. histolytica* in the characters at present regarded by protozoologists as differential, are possibly without the same pathogenic significance to man. It must be remembered that our knowledge of protozoa as pathogenic agents is still at an early stage, and that the more refined and specific methods of identification such as the serological tests now found necessary for identifying some of the best studied pathogenic bacteria are not at present available in the case of micro-organisms such as *E. histolytica*.

Now amoebic dysentery is a disease the pathological anatomy of which is distinctive by reason both of the ragged and deep ulcers in the wall of the large intestine, and also from the tendency of the patient to develop hepatic abscess. We know of no evidence of the occurrence of such a disease in this country on any large scale. At the same time there are records in the literature of a few individual cases of persons who have not been abroad and have suffered from a disease not unlike amoebic dysentery. Several instances of this are collected and described by Mr. Dobell in his report, and particulars are also given of two cases of amoebic dysentery, both of which appear to have contracted the disease in this country during the war. But if cases presenting the characteristic lesions of amoebic dysentery are rare in this country, cases of colitis are comparatively common, and the considered opinion of such a distinguished protozoologist as Mr. Dobell with regard to the prevalence of *E. histolytica* in the general population indicates the desirability of examining all cases of this condition for protozoa and for *E. histolytica* in particular. It is interesting to learn that already in a case of ulcerative colitis in a patient who had not been abroad Dr. P. P. Laidlaw of Guy's Hospital has succeeded in finding *E. histolytica*. It may be also that cases of diarrhoea occurring in this country are associated with protozoal infection to a larger extent than has hitherto been suspected. Mr. Dobell's report should do much to stimulate pathologists to search for protozoa in such cases, and to become more expert at recognizing these parasites than has hitherto been thought necessary.

[1] Medical Research Council. Special Report Series, No. 59. A Report on the Occurrence of Intestinal Protozoa in the Inhabitants of Britain. By Clifford Dobell, F.R.S., with Contributions by A. H. Campbell, B.Sc., T. Goodey, D.Sc., R. C. McLean, M.A., Muriel M. Nutt, and A. G. Thacker, A.R.C.S.

POETRY AND MEDICAL MEN.

ABOUT five years ago Dr. C. L. Dana of New York published under the title of *Poetry and the Doctors*[1] a charming book containing a catalogue of poetical works written by medical men, with biographical notes and an essay on the poetry of certain ancient practitioners of medicine, illustrated with translations from the Latin and by beautiful reproductions of the title pages of the rarer works. Some of the 162 medical men in this catalogue, and it would not be difficult to expand the list, have been famous as poets, and doctors in little more than name—for example, Keats, Schiller, Oliver Goldsmith, and Crabbe; others, such as Akenside, Oliver Wendell Holmes, and S. Weir Mitchell, have been distinguished in both these capacities; but in most instances the lyrical efforts of the disciples of Aesculapius have been of the nature of parerga or incidents in lives otherwise given up to its stern realities, "to interpose a little ease" among the worries of practice, as is illustrated by Sir H. Halford's "Nugae Metricae," mainly composed in his carriage during his professional rounds. To throw

[1] *Poetry and the Doctors.* By Charles L. Dana, A.M., M.D., LL.D. The Elm Tree Press, Woodstock, Vermont. 1916. (Pp. 83.)

off some Latin verse may well have been a fashionable and cultured pastime. Thus, in the course of his biographical essay on Elisha Bartlett, the late Sir William Osler writes: "It is remarkable how many physicians write poetry or what passes as such. I have been told of a period in the history of the Royal College of Physicians of London when every elect (censor), as they were called, had written verses." Book-collecting is a hobby not unknown among medical men, and Dr. Dana's example may stimulate some of us to specialize in the poetical works of our colleagues.

It is, indeed, interesting to consider for a moment what kind of poetry mainly appeals to members of our profession in their hours of ease. In attempting to answer this question appeal may be made to *A Physician's Anthology of English and American Poetry*, selected and arranged under eighteen headings by Drs. Casey A. Wood and Fielding H. Garrison.[2] This collection is devoted neither to poetry by medical men, though they are not excluded, nor to poems on medical subjects. It has been made on the basis of Goethe's view that the only inspired poem is the short occasional one, struck out in a momentary clairvoyance; accordingly, the longer and sustained flights of inspiration, as in Milton and Wordsworth, are not included. In his scholarly foreword Dr. Fielding Garrison points out that from the beginnings of civilization medical men have excelled in serious studies, and that in the generation just past the poets most favoured by them were those who dealt with the ethical and philosophical aspects of life, such as Wordsworth, Shelley, Matthew Arnold, Clough, Lord Houghton, and Emerson; whereas Arnold's poetry seldom appeals to the average successful man. The explanation put forward is that a good doctor's adjustment to life—cheerful, humorous, and friendly in external relations, but austere in the background of his mind—is very like Arnold's own account of the poet's muse. By his calling and contact with disease the doctor naturally tends to become a realist; and escape from the ugliness of life, which reached its climax in the great war, may be afforded him by the finer strains of British poetry. The selections in this anthology begin with those dealing with "Youth and Manhood," and the last three headings are entitled "Taedium Vitae," "De Senectute," and "Divina Mors"; they have kept clear of the hackneyed verses that so commonly appear in anthologies, and are drawn from over a hundred authors, those most in evidence being Arnold, Emerson, Lecky, Tennyson, and Wordsworth. In the section "In War Time" Rupert Brooke's "The Dead" rightly finds a place, but we miss his fine lines on "The Soldier" and also John McCrae's "In Flanders Fields."

This anthology was originally intended as a tribute to the late Sir William Osler on his seventieth birthday, but, although the contents had been approved by him, the volume was not out of the publisher's hands at the time of the death of this beloved physician. Dr. Fielding Garrison has therefore added to his foreword a finely expressed appreciation of "the great liaison-officer of the Anglo-Saxon profession," whose combination of spiritual gravity with attractive humanity amounted to a kind of genius. Though he never wrote verse, Osler by his written and spoken word stimulated his pupils "to recognize the true poetry of life—the poetry of the commonplace, of the ordinary man, of the plain toil-worn woman, with their loves and their joys, their sorrows and their griefs"; and to him as the great humanist of modern medicine, the friend, inspirer, and encourager of youth, this anthology has been affectionately dedicated.

[2] *A Physician's Anthology of English and American Poetry*. Selected and arranged by Casey A. Wood, M.D., and Fielding H. Garrison, M.D. Pages 346. Humphrey Milford, Oxford University Press, London, New York, Toronto, etc. 1920. Price 8s. 6d.

AN OUTBREAK OF LETHARGIC ENCEPHALITIS.

THE number of cases of lethargic encephalitis is increasing in England, and perhaps particularly in London. During November only 4 cases were notified in London; in December 6 or 7 cases were notified in each of the later weeks, and in the weeks ending January 8th and 15th the numbers were 13 and 14 respectively. In the week ending January 22nd, 21 cases were notified, in the following week 29, and in the week ending February 5th, 22. At the same time cases have been reported from various parts of the country—the Isle of Wight, Dorset, Derbyshire, Staffordshire, and Northumberland. A case is reported also from the North of Ireland (co. Armagh). The cases in Staffordshire occurred in the Potteries; four patients there have been under treatment in the isolation hospital, of whom one has died, and several other patients are being treated in their own homes. The two cases in Dorsetshire were from villages widely apart, and it is commonly difficult to trace the source of infection. Nevertheless, in a collection of cases made for the Ministry of Health multiple cases of three and two in the same house were noted, and Dr. A. Salusbury MacNalty[1] has recently presented a report on a remarkable outbreak in August, 1919, at the Rescue and Training Home at Derby. It appears that this explosive outbreak attacked 12 out of 22 female residents, 2 cases arising on August 2nd, 8 in the next three days, and the remaining 2 on August 19th and 27th. In a previous collection of cases made for the Ministry of Health multiple cases of 3 and 2 in the same house were noted, but there is no record of an outbreak such as that at Derby. Nine of the 12 cases, all comparatively young, belonged to the type with general symptoms and ophthalmoplegia, which contains 75 per cent. of the total cases of the disease; 5 of these 9 cases, including the first one, proved fatal, and were exceptionally rapid, with a duration of three to ten days, whereas in the author's previous collection the average duration of the fatal cases was three weeks. From the acuteness and number of the cases it would appear that the virus was highly virulent, and that there was a departure from the usual sporadic to an epidemic form of the disease; it is also possible that the severity of the outbreak was partly due to the youth of these nine patients. The remaining 3 cases were "abortive," and occurred in women aged 40, 34, and 30 years. The source of the outbreak could not be traced, though the presence of an unrecognized "abortive" case or carrier cannot be excluded; no case of encephalitis lethargica, of acute poliomyelitis, or of a similar obscure illness had been recently notified in Derby. The clinical symptoms of the cases corresponded closely with those of encephalitis lethargica, and differed from those described in botulism, and there was no reason to suspect poisoning by belladonna, stramonium, hyoscyamus, or solanum. The pathological report is of particular interest, for microscopic examination of the brain in four of the fatal cases—two by Professors H. M. Turnbull and J. MacIntosh and two by Drs. Da Fano and Helen Ingleby—did not show the lesions characteristic of encephalitis lethargica. But any doubt as to the correctness of the clinical diagnosis are dispelled by Professor MacIntosh's production of a fatal lethargic illness in a monkey by means of intracerebral and intraperitoneal injection of a filtered emulsion of cerebral tissue from the first case, the monkey's brain being found by Professor Turnbull to show the characteristic histological changes of encephalitis lethargica in man. This appears to be the first indisputable occasion upon

[1] A. Salusbury MacNalty: Appendix vii to the Chief Medical Officer's Report, 1919-1920.

which experimental transmission of encephalitis lethargica to an animal has been successful. The probable explanation of the negative results of examination of the brains of the fatal cases is that the course of the disease was so rapid that there was not time for the characteristic inflammatory changes to appear in the central nervous system.

DISPOSAL OF SURPLUS MEDICAL STORES TO HOSPITALS.

SIR NAPIER BURNETT, on behalf of the Joint Council of the Order of St. John of Jerusalem and the British Red Cross Society, has concluded an arrangement with the Ministry of Munitions for the disposal on favourable terms to hospitals and convalescent homes, and similar institutions supported by voluntary contributions, of the great surplus of medical stores and equipment which have been left over from the war. The part played by the two societies in the transactions will be entirely a voluntary one, and, while the hospitals will have the benefit of the organization and the low prices, the whole of the proceeds will go into the national exchequer. At the present time the stores have been offered for sale along with other surplus goods by the Ministry of Munitions in the usual way, but as the medical stores are mixed up with other goods in the dépôts scattered throughout the country it has been difficult for hospitals and others interested to view them and to obtain them in a satisfactory manner. By the new arrangement the medical stores and accessories have been separated, and they will all be brought to one central dépôt at Shepherd's Bush, London, W. At this dépôt the goods can be inspected by hospital officials, and sales will be effected through the officials of the two societies. The stores that are available for disposal include such medical stores as surgical and dental instruments, *x*-ray apparatus, drugs, and surgical dressings. Samples will be on view from stores that are included in other departments—such articles, for instance, as hospital beds, furniture, clothing, bedding, ward equipment, trolleys, lockers, and tables. The articles for disposal are all being carefully examined and graded so that the purchasers can be assured that every article which is purchased is fit for use, as goods that are not in a serviceable condition will not be allowed to be included in the sale. The first grade will consist of those stores which are in an absolutely new and first-class condition, and the second grade of stores will be those partly used, soiled, or chipped. It is expected that the goods will be ready for sale early in March, and as soon as the work of collecting and grading has been finished, a circular will be sent out to every hospital and similar institution in Britain describing the stores that will be on sale and the time when they will be on view. Each hospital will receive a special card of admission for the inspection of the stores at the dépôt. During the war many hospitals have had of necessity to allow their equipment to run down both in quality and quantity, and this sale of surplus medical stores affords them an excellent opportunity of replenishing it. Although the Ministry of Munitions has invariably carried on its sales on a cash basis, Sir Napier Burnett has been able to have the concession allowed to hospitals of obtaining three months' credit in regard to these purchases. The quantity of material available is very large, as it is estimated that there are £500,000 worth of surplus medical stores in this country alone, while large supplies are still expected from overseas. Hospitals are requested not to make any immediate effort to view or to purchase these goods, as they are not yet ready for inspection, and they will be informed of the actual date when the dépôt will be open. If, however, any hospital authorities eligible for participation in this scheme do not receive a circular by the end of this month, they are requested to communicate with Sir Napier Burnett at the offices of the British Red Cross Society, 19, Berkeley Street, London, W.1.

THE LONDON UNIVERSITY PHYSIOLOGICAL LABORATORY.

THE fate of the Physiological Laboratory of the University of London still hangs in the balance. As was stated a fortnight ago, the Physiological Society has unanimously expressed the opinion that the closure of the laboratory would be a grave injury to the advancement of science and knowledge and to the teaching of physiology in London, and would therefore be contrary to the public interest. We learn from an article by the Director, in *Education*, that the matter will come before the Faculty of Science of the University at its meeting on March 4th. A little over ten years ago the Senate, after receiving identical reports from the academic and internal councils to the effect that "it is highly desirable that the work of the Physiological Laboratory be continued as forming a valuable part of the work of the university," resolved to allocate £800 towards the maintenance of the laboratory. Last December the Senate, because it wishes to use the rooms now occupied by the Physiological Laboratory for its expanding clerical staff, and because the London County Council has suspended its annual grant of £500 a year for the laboratory, resolved that the laboratory should be closed at the end of July next unless the London County Council at once restored its grant. This, we fear, the Council is not likely to do, and unless public scientific and medical opinion can influence the Senate the valuable work which has been carried on unremittingly by the laboratory since it was opened by the Chancellor in 1902, will be brought to an end. Looking back to the last annual report of the Physiological Laboratory Committee, signed by Sir David Ferrier, we find that a great deal of important work was in progress during 1919. In pursuance of the policy proper to a university laboratory of teaching the teacher, courses of advanced lectures are given annually, and last year the Director gave two courses, one on the energy balance of the human body and the other on electric signs of emotive activity. During 1920 the Director pursued his researches on these subjects, and Mr. J. A. Gardner, reader in physiological chemistry in the University, with his assistants, was able to resume lines of research with the prosecution of which the war had seriously interfered; those now in progress are concerned with the digestibility of fats, and in particular with cholesterin metabolism in disease and in infants under various diets. Among other researches undertaken was that by Dr. Burridge on the action of salts, a subject which has a pharmacological bearing, and by Dr. Ellis, the recently appointed lecturer on chemistry at St. Mary's Hospital, on fats. Further, a working anaesthetist has been engaged under the supervision of the Director in the quantitative estimation of chloroform. During last year there were altogether ten workers in the laboratory. We hope, therefore, that in all the circumstances the Senate will reconsider its recent decision and revert to the policy affirmed by it in 1910 and by the Vice-Chancellor, Dr. Robertson, at an earlier date, when he said: "I think the University is too deeply committed to the success of the (Physiological) Department to permit its abandonment except at the cost of a very serious confession of failure, the effect of which on the position of the University would be most injurious."

PUBLIC HEALTH IN CZECHO-SLOVAKIA.

A MEDICAL commission appointed by the Government of Czecho-Slovakia is at present in this country to study public health institutions and administration. On February 14th the commission visited the Central Meat Market and the Fish Market, and were afterwards entertained at luncheon in the Guildhall by Alderman Sir Charles Wakefield, who spoke warmly of the hospitable reception accorded to a civic deputation to the Czecho-Slovak Festival of Freedom last year in Prague. He expressed the hope that, under the direction of Sir George Newman,

the commission had already seen much that interested it, adding that the members of the Sanitary Committee of the City Corporation and Dr. Howarth, medical officer of health, would be anxious to show it the methods adopted for dealing with food control. The London meat market, Sir Charles Wakefield said, is the largest for dead meat in the world, receiving enormous quantities of imported, home killed, and tinned meats, and provisions of all kinds, including green vegetables from the Continent. To regulate, with due regard to the public health, the distribution of these great quantities of food, a huge machinery had grown up and was working with great efficiency. Czecho-Slovakia had recognized that efficient public health administration was one of the tests of a country's civilization. The war had left an evil legacy of special difficulties to Czecho-Slovakia, but that enterprising new country was tackling the problems of public health with characteristic energy. Dr. Halek, speaking on behalf of the Czecho-Slovak Ministry of Health, said that the Commission had found its short study of English public health institutions very encouraging. English civil sanitary administration, like her military sanitation, was unrivalled, and her voluntary hospitals, like her devoted nursing service, were models for others to follow. Sir Charles Wakefield proposed the health of President Masaryk, President of the Czecho-Slovak Republic; the toast was acknowledged by Dr. Mastny, Czecho-Slovakian Minister in this country. Sir George Clerk, British Minister in Prague, spoke in sanguine terms of the future of the Czecho-Slovak Republic. The Commission, which consists of Dr. Vladimir Bazika, Dr. Bohumil Vacek, Dr. Ivan Halek, Mr. Antonin Kolinsky, Dr. Vladimir Petrik, and Dr. Karel Driml, has recently paid a visit to the United States and will spend some time in France on its way home.

EFFICIENCY ON VIEW.

THE average man, conscious of his failure to reach 100 per cent., comes away more depressed than ever from the Efficiency Exhibition now being held in London. Under the roof of Olympia have been gathered mechanical substitutes for most of his mental processes, certainly including those of memory, calculation, and sustained attention, as well as for his physical strength and skill. Here he finds machines which are ready to act as his accountant, his private secretary, his housekeeper, his porter, and also as his candid friend and mentor, checking every motion he makes and almost every breath he draws. At the same time, the detached observer may wonder whether all this brisk efficiency, all this frictionless movement, which eliminates error and reduces the time factor to the minimum, is quite the ideal after which to strive; a little margin of frailty may be Nature's intention for us. It is therefore in certain individual exhibits rather than in general impressions that the leisurely as distinct from the commercial mind will find interest. The University of London illustrates its teaching and research work; Middlesex Hospital the daily routine of its research department, and St. Mary's Medical School the uses of industrial medicine—this last in enforcement of an appeal which is being made for the establishment of a department in that subject at a cost of £60,000. The visitor is also afforded a glimpse of the Metallurgical Department at Sheffield University, and of Armstrong College, Newcastle, where there is an apparatus for determining the liability to explosion of various coal dusts and the inhibitory power of inert dust. Electricity has always stood at the right hand of efficiency, and many of its newer uses are demonstrated at the stand of the British Thomson-Houston Company, where there is also a Coolidge portable *x*-ray outfit comprising everything necessary for *x*-ray examination by the bedside. The apparatus can be brought to the house in the doctor's motor-car, carried upstairs, and worked from the nearest lampholder or wall plug. The visitor's eye will be caught by many other devices, from an improved system of sewage purification to a scheme for artificial daylight, and from the latest form of hygiene propaganda to the construction of ophthalmic lenses. The exhibition remains open until February 26th.

MEDICAL INSTITUTE FOR NEWCASTLE.

IN presenting a Medical Institute to the medical profession in the North of England, Dr. J. W. Smith, of Ryton-on-Tyne, has provided a much-needed want and has raised a memorial—in a form more valuable and holding more promise of keeping green the memory than most memorials—to his son, Dr. J. Wilkie Smith, a young doctor of medicine of great promise who died six years ago. Dr. J. W. Smith, who is an ex-president of the North of England Branch of the British Medical Association and of several other medical societies, is one of the best-known men and represents the finest type of general practitioner of the North; he has shown vision beyond the ordinary in the gift of this medical club. Property was secured at 7, Windsor Terrace, Newcastle-on-Tyne, and alterations were made so as to provide suitable accommodation for a dining-room, lounge, card and billiard rooms, in addition to a library, lecture and committee rooms and bedrooms for country members. The building has been redecorated throughout and the rooms have been tastefully furnished; thus the Institute has an attractive and home-like air, appropriate to its object. On February 10th a large gathering of medical men took place at the Institute, when the presentation of it to the trustees was made by Dr. J. W. Smith. In making the presentation Dr. Smith said that he hoped it would provide not only a social and scientific centre for the profession in the North, but also that the members would not forget the cognate sciences; and he especially remarked on the value of philosophy, literature, and music to medical men in their mission in life. The gift was received by Professor Rutherford Morison on behalf of the trustees; and Professor Drummond, who presided, thanked Dr. Smith in a feeling speech for his munificent and timely gift. Those present were afterwards entertained to tea, and it was agreed that, although the Institute was now open, there should be an official ceremony at an early date to celebrate the event. Intending members should make application to the honorary secretary, Dr. Stanley Robson, at the Institute.

AN AMERICAN FIELD MARSHAL.

THE title of "field marshal of American surgery" was applied by Dr. de Schweinitz to Dr. William Williams Keen on January 20th; the occasion was the celebration of Dr. Keen's 84th birthday, when he was entertained at a banquet in Philadelphia, was presented with a life-size bronze portrait bust, and listened to speeches and poems in his honour. Dr. Keen served as a surgeon during the Civil War in America, and during the great European war; though on the later occasion he did not leave his own country, he did much important work and was gazetted lieutenant-colonel; in the bust he is shown in the uniform of that rank. In the interval between the two wars Dr. Keen attained a commanding position as a surgeon, a teacher, and a writer. His books on the surgery of the brain and of the spine first made his name widely known, and it became a household word in this country after the publication of the great *American Textbook of Surgery*, which he edited in co-operation with the late Dr. William White. During the war he produced a small handbook on the *Treatment of War Wounds*, which ran through several editions. The banquet on January 20th was an assembly remarkable in numbers—for over 600 men and 200 ladies were present—and in the representative character of the attendance. The speakers included the president of the Brown University, where

Dr. Keen graduated in 1859, who said that the outstanding traits in Dr. Keen's character were "a wholesome discontent and a persistent optimism." Dr. William Welch, of Johns Hopkins University, spoke of Dr. Keen's powers as a teacher, and of his great services as a defender of methods of research in medical science. He had earned the gratitude not only of this but of all future generations by successfully combating ignorance, prejudice, and unscrupulousness. We may recall that Dr. Keen embodied his views in a volume entitled *Medical Research and Human Welfare*. Dr. J. C. Da Costa, Dr. Keen's successor as professor of surgery in Jefferson Medical College, gave a short account of Dr. Keen's life. After recalling that when Dr. Keen was born the population of the United States was only 16,000,000 and that of Philadelphia 170,000, while there were only 120 miles of railroad in America, he said that Dr. Keen was foremost among those who changed the crude surgery of the middle of the nineteenth century to the surgery of to-day, and his character was such that his assistants and colleagues at Jefferson Hospital "were his adherents, sworn, true and faithful as soldiers of Napoleon." Mr. D. J. Hill, formerly Ambassador to Germany, and Dr. Keen's friend for five-and-thirty years, eulogized him as a man the whole nation honoured, not only as a surgeon and as a man, but as a servant of his country. Four volumes, containing over 800 letters and telegrams of congratulation from friends, were then presented to Dr. Keen by General Merritt W. Ireland, Surgeon-General of the United States Army. The presentation of the bust was made by Dr. William J. Taylor, President of the College of Physicians of Philadelphia. Dr. Keen, in his reply, said that his professional life covered sixty-one years, forty of which were spent in service as a teacher, a service of which no one not himself a teacher could imagine the joy. If asked the secret of his long life he would reply, "Have some unfinished but not too urgent task awaiting you right outside the door, and you can murder time in the first degree."

FILARIASIS EXPEDITION.

THE London School of Tropical Medicine has arranged to send an expedition to British Guiana to investigate filariasis with the view of obtaining information as to its prevention and treatment. The expedition is being sent at the request, made shortly before he left the Colonial Office, of Lord Milner, who considered that the Government required further advice as to the best method of controlling the disease. At the suggestion of Sir Patrick Manson the expedition will visit also certain West Indian islands, choosing one, such as Barbados, where the rate of attack is high, and another, such as Grenada, where it is low. It is hoped that by comparing and contrasting the circumstances of two such islands light may be thrown on the conditions which favour filaria. The leader of the expedition is Professor R. T. Leiper, director of the helminthology department of the London School of Tropical Medicine; the other members are Dr. G. M. Vevers, demonstrator of helminthology in the School, Dr. John Anderson, Dr. Chung Un Lee, and Dr. Mahommed Khalil of the Egyptian Medical Service. The expedition will sail early next month.

MEASUREMENT OF HUMAN EMOTION.

THE discourse at the Royal Institution on February 4th by Dr. A. D. Waller, F.R.S., the Director of the Physiological Laboratory of the University of London, was concerned with the galvanometric measurement of manifestations of emotion in man. Physiologically all emotions, he pointed out, are expressed as neural outbursts from the central nervous system through efferent nerves to muscles and glands. The manifestations in general were due to intensified physiological activity at the periphery, such as a blush, pallor, a rush of tears, or a dilated pupil. The physical sign of emotion known, since the observations of Veraguth of Zurich in 1909, as the psycho-galvanic reflex, afforded the most convenient gauge of human temperament, since it declared how much a given subject was moved by his thoughts and feelings. The emotive response was in the main a phenomenon observed in the palm, though it occurred also in the sole. If the hand and the forearm of an ordinary individual were connected with each of two galvanometers and two Wheatstone bridges, the reaction of the arm was steady, while that of the hand was irregular. To a sudden pin-prick, threatened or real, it gave a smart and obvious response. The magnitude of the response in either case varied with different people; in those who might be called "positives" little or no disturbance was caused by the threat, but in those whom he termed "imaginatives" or "sensitives" a large response occurred to the threat, larger, it might be, than to the real pin-prick. The "imaginatives" might be further distinguished into different classes; high in the scale were persons who could at will either keep quiet, or think thoughts, or see imaginary visions or hear imaginary words. To watch the galvanometric signs of these subjective phenomena was very interesting both to the onlooker and to the subject, especially the latter, to whom to sit quietly watching himself think became an absorbing pastime. The emotive response varied in different individuals and in the same individual with different states of mind and body. The distribution of the response over the body was especially interesting. In normal persons it was confined to the palms of the hands and the soles of the feet, but in "sensitives" it extended up the limbs. The few spiritualistic mediums Dr. Waller had been able to examine had, with one exception, given the reaction proper to "sensitives." Diurnal variations of the reaction occurred, the responses being best about the middle of the day, when physiological activity was high. The question had been asked whether pleasant and painful sensations produced similar or opposed galvanometric deflections. The emotive response was a sharp movement and occurred always in one direction—decreased resistance—that is to say, increased permeability. Increased resistance was never observed, but only sometimes diminished permeability. Dr. Waller went on to make a further classification of individuals into (1) "sensitives" or "imaginatives"; (2) "normal," including the majority of men and women; (3) "insensitives," in whom were included hysterical subjects (pythiatics); and (4) certain other cases that might be called "super-sensitives"; some shell-shock cases were included in both the third and fourth categories. In concluding his lecture, Dr. Waller said that these cases required further investigation, and that, in fact, no general conclusions could justifiably be drawn from the facts he had put forward until more data had been collected.

THE NEW PARLIAMENTARY SESSION.

OUR Lobby Correspondent writes: But for the fact that the legislative programme of the Government was already to a large extent known, the outline contained in the Speech of the King, on opening Parliament on February 15th, would have been disappointing. No reference whatever was made to health matters, except in so far as a bill to deal with liquor trade administration may be deemed to come within this category. The fact that there is no mention of any measure for the reform of the Poor Law must, it is to be feared, be taken as evidence that none will be introduced this year. On the other hand, the omission of any allusion to the Patent Medicines Bill, the Dentists Bill and to certain important provisions in the Ministry of Health (Miscellaneous Provisions) Bill need not cause serious disquietude if the medical group in the House of Commons do their duty in drawing attention to the urgency of these considerations. The Government having gone so far in these affairs, explicit remark upon them was hardly to be looked for in the Speech from the Throne. Nevertheless, it

would have been reassuring as to the Cabinet's earnestness in this connexion if some comprehensive observation covering this field had been included in the deliverance, since the King speaks on the advice of his Ministers. In the prospect of a shortened and crowded session, some pressure of parliamentary and public opinion may be desirable in order that the measures indicated may get a fair place in the time-table after the financial business—which must have priority—has been dealt with.

EYE-STRAIN IN CINEMATOGRAPH HALLS.

THE London County Council, as briefly stated at the close of an article on the cinematograph in our last issue (p. 234), has adopted the recommendations of the committee appointed by the Illuminating Engineering Society to inquire into eye-strain in cinematograph halls. These recommendations will be put into force at once so far as new halls are concerned, and will be applied to existing halls as opportunity offers. The chief recommendation sets out the limit of the vertical angle of view. The committee believes that ocular discomfort arises mainly from the abnormal angle at which very often the eyes of spectators are directed upwards, and that conditions suitable for the eyes would be secured if a moderate value for the angle of elevation were adopted. It is therefore proposed that the angle of elevation subtended at the eye of any person seated in the front row by the length of the vertical line dropped from the centre of the top edge of the picture to the horizontal plane passing through the observer's eye shall not exceed 35 degrees. In some of the London halls this condition is complied with, and in others it is approached, but in others again the angle in question exceeds 60 degrees.

THE summer meeting of the Section of Laryngology of the Royal Society of Medicine will be held on Thursday, June 2nd, Friday, June 3rd, and, if necessary, will be extended to Saturday, June 4th. In addition to the reading of papers, there will be demonstrations on various subjects, an exhibition of instruments, and a museum.

MEMORIAL TO SIR VICTOR HORSLEY.

WE published on January 1st a circular letter issued by the general committee formed to establish a memorial to the late Sir Victor Horsley. The intention is, if sufficient support is obtained, to found a lectureship in the University of London by which Sir Victor Horsley's name would be perpetuated.

The first list of subscriptions amounted to £324 17s.; since then the following additional subscriptions have been received:

SECOND LIST OF SUBSCRIPTIONS.

£105.—Mr. and Mrs. Edward Robinson.
£20.—Sir F. W. Chance.
£10 10s.—Drs. W. S. Coleman, A. H. Burgess, C. H. Carlisle.
£10.—Miss M. W. Ranken.
£5 5s.—Sir Berkeley Moynihan, K.C.M.G., C.B., Sir A. Pearce Gould, K.C.V.O., C.B.E., J. Smith Whitaker, F. J. Hopkinson, Wilfred Trotter, Miss Mary Robinson, Miss Margaret Knowles.
£5—Mrs. Scharlieb, C.B.E., M.D., Mrs. Rosa Napier, Miss Emily Chaplin.
£3 3s.—Sir Thomas Barlow, Bt., K.C.V.O., Sir Humphry D. Rolleston, K.C.B., Harry Platt, M.S., Dr. Thomas Wilson, Mrs. Frances Levy, Dr. Thomas W. Thomas, Dr. W. H. Rivers, Anonymous (per Dr. Collier).
£2 2s.—Sir William Macewen, C.B., Dr. E. Rowland Fothergill, Right Rev. Dr. Hine, Dr. May Thorne, Sir S. Squire Sprigge, Mrs. Henry Fawcett, J. H. Morgan, F.R.C.S., Dr. George Pernet, Emeritus Professor James Sully, Dr. J. A. Macdonald, Dr. Edwin Bramwell, J. Furneaux Jordan, J. H. Bown, Professor Halliburton.
£1 1s.—Lady Rhondda, Dr. Joyce, Dr. Wallace Henry, Professor Keith, Sister Newill, Sister Frinzeauma Low, P. Maude Webbe and A. J. Webbe, Canon J. W. Horsley, Charles W. Beresford, Mrs. E. J. Dawson, Miss Juliet Simons, Dr. Herbert Jones, Dr. H. Chick.
£1.—Miss T. R. Murray,
10s. 6d.—Mrs. Lindo Henry.
10s.—George E. Abbot.

In the previous list, p. 19, the name of Sir Cecil Harrison, K.B.E., was incorrectly given.

Subscriptions made payable to "the Victor Horsley Memorial Fund" may be sent to the Honorary Treasurers, Sir Frederick Mott, K.B.E., Maudsley Neurological Hospital, Denmark Hill, S.E.5., and Dr. Howard Tooth, C.B., C.M.G., 34, Harley Street, or the Honorary Secretaries, Sir W. Arbuthnot Lane, Bt., C.B., 21, Cavendish Square, W.1, and Edward J. Domville, C.B.E., Shutes Symondsbury, Bridport.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE HUNTERIAN FESTIVAL DINNER.

THE Hunterian Festival Dinner of the Royal College of Surgeons of England was held on February 14th—the anniversary of John Hunter's birth—in the library of the College, with the President, Sir ANTHONY BOWLBY, in the chair. H.R.H. the Prince of Wales honoured the College with his presence, and during the evening was formally admitted an Honorary Fellow, and signed the Roll. The Prince was received by the President, the Vice-Presidents, Sir Charles Ballance and Sir John Bland-Sutton, and the Secretary, Mr. S. Forrest Cowell. Four past Presidents of the College—Sir John Tweedy, Sir Henry Morris, Sir Rickman Godlee, and Sir George Makins—were presented. The company, which numbered nearly 100, included the Speaker of the House of Commons, the Marquis of Salisbury, Viscount Hambleden, Lord Lamington, General Lord Horne, the High Commissioners for Canada and New Zealand, the President of the Royal Society, the Presidents of the Royal College of Physicians of London and the Royal College of Surgeons of Edinburgh, the Lord Mayor and Sheriffs of London, the Dean of Westminster, the Treasurers of Gray's Inn and the Inner Temple, the Masters of the Society of Apothecaries and seven other City Companies, the medical heads of the Navy and Army, and Professor Theodore Tuffier of Paris.

The President's Speech.

Sir ANTHONY BOWLBY, in proposing the health of the Prince of Wales, said:

May it please your Royal Highness,—The Royal College of Surgeons of England is the descendant of two civic institutions which date back to the fourteenth century—namely, the Guild of Surgeons and the Company of Barber Surgeons, but it was founded by Charter as a Royal College in the year 1800. It was not, however, until the College celebrated its centenary in 1900 that it became empowered to create Honorary Fellows, and its first Honorary Fellow, Sir, was your illustrious grandfather, King Edward VII, who, while Prince of Wales, was graciously pleased to accept our Diploma in June, 1900. At a later date King George bestowed upon us a similar distinction, and I have now the honour of welcoming your Royal Highness as the third Prince of Wales to become an Honorary Fellow of the College.

Since the election of its first Honorary Fellow the College has from time to time elected other Fellows, and has generally done so in order to commemorate some important event. Following this precedent, it proceeded on July 24th, 1919, to commemorate the close of the Great War by electing six Honorary Fellows from those who had specially distinguished themselves in the war, and it was under these circumstances, Sir, that we requested you to allow us to propose your name. We knew the encouragement that your presence has been at the front; we appreciated your zeal and keenness for everything that benefited our soldiers, and, above all, we admired the spirit in which you performed the duties allotted to you as an officer in His Majesty's army. On the same date we elected His Royal Highness the Duke of Connaught, not only as a representative of the Royal House who had been closely associated with the army all his life, but also because he was the Colonel-in-Chief of that Royal Army Medical Corps which had served with such great distinction, and won for itself such universal praise. We elected Dr. Pierre Duval, the distinguished French surgeon, and Dr. Depage, the equally eminent Belgian professor, both of whom had so closely co-operated with us in the field, and had personally attended many British soldiers. Finally, we elected two representatives of our sister nation, the United States of America, and we chose Brigadier-General Finney, the "Chief Surgeon" to the American army in France, and the Professor of Surgery at Baltimore, and Charles Mayo of Rochester, who had acted as adviser to the Army Medical Service in America, and whose fame is world-wide. The medical professions of Great Britain and of the United States have for many years enjoyed the closest co-operation and friendship, and we were in no way surprised that, as soon as ever the drums of war beat to arms, the surgeons of America sprang to our aid. Within a very few months they supplied the personnel of six general hospitals, and, at a later period, over one thousand of them served in our army in France pending the arrival of their own troops. They served in our base hospitals, in our regiments, our field ambulances, and our casualty clearing stations during the third battle

of Ypres, and amongst them we were especially glad to welcome some of our own Honorary Fellows.

Such, Sir, is a brief record of the claims of the Honorary Fellows elected as representatives of our Allies at the time when you consented to accept our Diploma, and the College has never been more fortunate than in the distinguished names which it has been able to add to its roll at the end of the Great War.

The Royal College of Surgeons performs various public duties which I will not detail. It is the national custodian of the unequalled Hunterian Museum. It possesses a most valuable library open to the whole medical profession, and the Members and Fellows who have passed its examinations number, at the present time, nearly 18,000. Our great master, John Hunter, was the Surgeon-General to the army for some years before his death in 1793, and ever since his time large numbers of men holding our diplomas have served with the imperial forces of the Crown. The present chief medical officers of the Navy, of the Army, and of the Air Force, are all Members of our College, and several thousand of our Fellows and Members served in the late war. Over 350 of these gave their lives for their country, and your Royal Highness knows from your own experience in France that these lives were not given in vain.

We, Sir, in common with all sections of the community, have watched with the deepest interest both the career of your Royal Highness in the war, and also your more recent and invaluable missions to those great British possessions overseas which have so gallantly supported our common cause. We recognize that, both in war and in peace, in France and in the Dominions, you have been a fertile source of inspiration and of good fellowship, and, at the same time, we like to recall that, however far you may have roamed, you have not visited a Dominion or a Colony in which our College was not represented. We may indeed justly claim that, while the heart of our College is in England, our Fellows and Members circulate throughout the world. You, Sir, have been frequently described as "Britain's best Ambassador," but, if I may say so, you are far more than that. An ambassador is but the delegate of a friendly country to a foreign nation, while you are a living and indispensable link in that human chain of common aspirations, common ideals, and common patriotism which binds together all parts of our great Empire in a bond which is infinitely more enduring and unbreakable than all the treaties that ever have been or ever will be written. We use no mere form of words when we say that we fervently trust you may long live in health and happiness to further the good work for the Empire you have so successfully begun. In the name of the Royal College of Surgeons of England, Sir, I beg to thank you most heartily for coming amongst us this evening, and for doing us the honour of becoming an Honorary Fellow.

The Prince of Wales's Reply.

After the Prince had received the diploma and signed the roll of Honorary Fellows of the College, he said:

I thank you very much for bestowing on me, as you did on my father and my grandfather, the Honorary Fellowship of the Royal College of Surgeons of England. I am proud that I should have been elected at the same time as my uncle the Duke of Connaught and four of our distinguished Allies. The College of Surgeons has done splendid work for well over a century. Before the war I think that but few of my contemporaries knew all that the letters F.R.C.S. meant, but the war brought home not only to them but to everybody the full significance and meaning of these letters, and all the long years of successful research and experiment they stand for. Before we went out to the front—I am speaking of my contemporaries—we began to take a practical interest in surgery. Regimental doctors or the doctors of whatever units we were attached to lectured to us. Our female relatives and friends ministered to us and often practised on us, and later on all those who got in the way of a Hun bullet or shell became passive subjects of surgical work. All who served in the war had great or small dealings with your profession and its members, and I have heard nothing but the deepest gratitude expressed towards the medical branches of both Services and those who belong to them, from the surgeons—those who had regular commissions, and thousands (many of them members of this College) who joined up—down to the sick-berth stewards and, in the case of the Army, the orderlies. I include here those eminent surgeons like our chairman, who gave their valuable time, their help, and their advice. Among the most gallant episodes of the war were those of the unarmed battalion medical officers and their small staffs of stretcher-bearers. The work done by our surgeons and our doctors forms one of the finest chapters in the history of the war. There is no doubt that the fact that the men knew that if they were wounded they were going to be well treated cheered them more than we can understand. It is in this building that so much of the work and the knowledge which made all this possible had its origin. Knowing what that work was, having seen something of it myself, and realizing what is being done here, makes me doubly proud of the honour which has been done me to-night by your having admitted me to your Fellowship.

After the toast of "The Memory of John Hunter" had been honoured standing and in silence, the health of the many distinguished guests who were present to do honour to the science and art of surgery was proposed by Sir Charles Ballance. This toast was replied to by the Speaker of the House of Commons, who praised the good work done by the ten medical members in the present Parliament—"a modern baker's dozen." The health of the Hunterian Orator was proposed in an admirable speech by Sir George Parkin, Administrator of the Rhodes Bequest, who spoke from forty-five years' acquaintance with his fellow Canadian, Sir Charters Symonds, and impressed upon his hearers the importance of the reflex movement of students to Britain from the Dominions.

Scotland.

Association of School Medical Officers of Scotland.

A CONFERENCE has been arranged by the Association of School Medical Officers of Scotland, to be held on April 7th, 8th, and 9th, in the Provincial Training College, Edinburgh. On the first day a series of lectures will be given: Dr. Shrubsall, medical officer to the London County Council, will lecture on "Mental Deficiency," Dr. Norman Walker on "Skin Diseases in Schools," and Dr. MacGillivray, oculist to Dundee Educational Authority, on "The Educationally Blind Child," followed by a demonstration of the methods of education of such children. On the second day of the conference, through the co-operation of the Scottish Board of Health with the association, Professor Dreyer, M.D., of Oxford, will lecture on his recent work on "The Assessment of Physical Fitness," followed by a demonstration of apparatus and methods. This lecture, besides being of interest to medical practitioners engaged in school health work, should also attract medical officers of life insurance companies, and those companies which have offices in Edinburgh are being invited, therefore, to send their medical officers, and other officials interested, to this lecture. In the afternoon of the same day a joint meeting will be held with the Scottish League of Organizers and Teachers of Physical Training to discuss physical education, followed by a demonstration arranged by the Scottish League. On the third day of the conference visits will be paid to special schools and other institutions of interest in Edinburgh. The secretary of the conference is Dr. John Hunter, 8, Abercromby Place, Edinburgh, who will supply any further information which practitioners who are interested might like to have.

Glasgow Royal Infirmary.

The report of the managers of the Glasgow Royal Infirmary for 1920 shows an improvement in the finances of the institution compared with the previous year. The managers have completed the year with a surplus of £5,903, and have been able to replace that amount to capital reserves, which were encroached upon in 1919 to the extent of £21,100 to meet the deficiency in revenue that year. This has only been accomplished by applying for revenue purposes all legacies, bequests, and large donations.

The ordinary revenue was £81,725, being an increase of £28,923 over the previous year, and the ordinary expenditure was £116,947, an increase of £18,270. In spite of the continued increase in the cost of commodities and in wages, the deficiency in ordinary revenue was reduced to

£35,221, being an improvement of £10,653. The annual subscriptions showed an increase of £5,187.

The working class contributions were increased by £14,368; this was largely due to the adoption of the method and scale recommended by the Executive Committee of the conference which met to consider how employees of public works might effectively respond to the appeal of the infirmaries and hospitals. The scheme provided for a graduated scale of weekly contributions, with a minimum of 1d. off wages under 30s. per week, 1½d. off wages from 30s. to 40s., 2d. off wages from 40s. to 60s., 3d. off wages from 60s. to 90s., 4d. off wages from 90s. to 120s., 5d. off wages from 120s. to 140s., and 6d. off wages of 140s. and over. The workers periodically allocate the amount collected at the respective works among the institutions they desire to support.

ST. ANDREWS UNIVERSITY.

Professor David Waterston, M.D., has been appointed Adviser of Studies in the Faculty of Medicine at the University of St. Andrews, in place of Professor Herring, who has resigned that post on being appointed Dean of the Faculty of Science and Adviser of Studies in that Faculty.

Correspondence.

WHAT IS A SYMPTOM?

SIR,—I am obliged to Sir James Mackenzie for kindly replying to my question. Sir James gives as a possible definition of a symptom "the reaction of the tissues to an injurious agent." But is not this rather a definition of disease? A symptom I take to be an indication of the existence of disease in the living subject, which is quite a different thing; is it not?

My difficulty is to distinguish between signs and symptoms. We are in need of some term which shall embrace in its meaning evidence, of whatever kind, by means of which the presence of disease can be made manifest during life, whether by electrical and chemical tests, *x*-ray apparatus, exploratory incisions, or what not.

The term "symptom" is not sufficiently comprehensive for the purpose. In view of this fact and of the ambiguity attaching to the word, why not abandon it in favour of the wholly unambiguous term "sign" (*signum*)?—I am, etc.,

London, W., Feb. 12th. HARRY CAMPBELL.

X-RAY RADIATION AND CANCER.

SIR,—The letter of Dr. James Willcox is a welcome contribution to this important subject, and I would like to make comment thereon so far as it refers to my letter of January 29th last. The phrase "a promise of a cure" is rather more than I intended to convey. If the word "possibility" is substituted for "promise" I shall be content. Then as to casting an aspersion on our present methods, I certainly did not mean that. These methods have done well, but the science of deep radio-therapy is a progressive one, so that what seems best to-day becomes more or less obsolete at some future time. When I first heard of the method I described it seemed to me so sound in theory as to be well worth investigation on the spot. My experience convinced me that it constitutes a real advance on our methods here, and I lost no time in submitting it to the consideration of my colleagues. I could not well cast aspersion on methods practised by myself until quite recently and not yet entirely abandoned; all the same, we must move with the times.

As for the use of these very hard tubes for therapeutic purposes, it is my considered opinion that, within reasonable limits at least, the harder the better. From the very early days of *x*-ray therapy I have known from practical experience that hard tubes gave better results than soft ones, but at that time and for some time afterwards I could offer no adequate reason. Even the comparatively feeble filters used at first improved matters, which improvement progressed with the increasing absorption value of the filtering material—all tending towards the production of a more homogeneous beam, more nearly akin to the hardest gamma rays. The fact that these passed through the tissues so readily led many to suppose that they could be of but limited use, on the theory that only those rays actually absorbed had any biological action. This idea has done much to retard the development of deep therapy in this country and elsewhere. In addition to this, the limitations imposed upon us by our apparatus prevented research with tubes having a resistance above about 9 in. of air. It is probably true to state that only a limited number of radiologists fully realize the wide difference in the principles underlying radiography and radio-therapy. The present day exacting demands of radiography take account only of the primary beam of rays emanating from the anticathode. Low resistance tubes must be used to get the maximum actinism, contrast, and detail; equally important is it to minimize the influence of secondary or "stray" rays. If a hard tube is used we lose not only actinism and contrast, but detail and outline are blurred or lost through the influence of these secondary radiations. Indeed it would appear that their influence increases in more rapid proportion than the hardness of the tube. While it is probably true that the harder the primary beam the less action, *per se*, it has on the tissues it traverses, it more than makes up for this in the profuse amount of secondary radiations set up.

Thus, in radiography the primary beam is all-important; in radio-therapy the chief function of the primary beam is to set up secondary rays in the locality under treatment, such secondary radiations being the principal factor in the changes that follow.

There is evidence to prove the substantial accuracy of these statements, and once realized it is easy to see how we stand to gain by increasing the hardness of our tubes. How far it is possible to go in this direction has yet to be ascertained.

That the filters in common use have too low an absorption value is easily demonstrated. It must be sufficient to make the resultant beam homogeneous; if it falls short of this the disparity between the maximum skin dose and that delivered at any given depth, such as 10 cm. below, is so great that thorough and efficient irradiation of a deeply seated lesion becomes unnecessarily difficult and prolonged. Working with a tube of high resistance (16 in.) no less than 12 mm. of Al, or 0.5 mm. of Zn, are necessary to get homogeneous rays. It is most likely that the same will be required with softer tubes, and such radiation as succeeds in getting through will be small in amount and have a very limited value.

My experience at Erlangen showed unmistakably that the use of a standard type of homogeneous radiation makes for better and more uniform results. As any practical radiologist knows, we are continually being confronted with seeming paradoxes, as instanced in the, at times, widely divergent results in more or less similar cases treated on apparently the same lines. Such are not unknown in the practice of the technique I have described, but they are rare and usually can be acounted for. The system has its defects, of course; we would like to see the time of exposure reduced, as well as the post-radiation sickness, an unpleasant though not serious immediate after-effect. I look for improvement in the use of still harder tubes, but at present it would appear that an equivalent spark gap of 16 in. is as far as it is safe to go, owing to the risk of puncture of the tube itself. If, as it seems, our late enemies have scored a point, we need not despair; let us learn the lesson gratefully and gracefully and then "go one better." British radiologists and British manufacturers may be trusted to rise to the occasion and make good.—I am, etc.,

London, W., Feb. 12th. REGINALD MORTON.

THE PHYSIOLOGICAL LABORATORY OF THE UNIVERSITY OF LONDON.

SIR,—As a teacher of physiology in a London medical school, and as one who has worked in the physiological laboratory of the University of London, I should be grateful for the opportunity of making a few observations on the suggestion that this laboratory should be closed.

The reasons put forward for this, to my mind, retrograde step appear entirely inadequate. Although I find myself quite in accord with the view that the University should give what monetary assistance it is able to research work

in its component colleges, I cannot assent to the proposition that such assistance should be given at the price of the destruction of the University Physiological Laboratory.

Such a laboratory performs a function which no college laboratory, however well equipped, can hope to perform. It forms a centre where the many workers in the various colleges can meet on common ground—it has, in short, a co-ordinating function which is as necessary to university well-being as it is to the life of our bodies. In addition, the laboratory affords most valuable opportunities for the carrying out of certain lines of research, opportunities to do which are, for one reason or another, not available in college laboratories.

The plea that the laboratory should be closed because the space it occupies is needed for administrative purposes surely contains within itself its own refutation. Administration is a necessary part of an efficient university, but it is not its life blood, and that is precisely what research is.

That this laboratory has done and is doing work of the greatest utility cannot be questioned. In this connexion Professor Waller's estimations of the carbon dioxide output of workers in various trades and under various conditions might be quoted as an example of recent activities. These estimations cannot fail to prove valuable contributions to the problem of industrial fatigue, a problem the solution of which holds out a sure promise of increased national efficiency. This work alone should give pause to those who propose to eliminate the Physiological Laboratory of the University of London.—I am, etc.,

B. J. COLLINGWOOD, M.D.,
Physiology Department Medical School,
February 15th. St. Mary's Hospital, Paddington.

FRACTURE OF THE FIRST RIB.

SIR,—There are a few points in the article on fracture of the first rib, by Messrs. Milligan and Ford, in the JOURNAL of February 5th, to which I would like to call attention, in that they tend to perpetuate several fallacies still in the older textbooks.

First, as to the rarity of this accident, Sir Arbuthnot Lane pointed out as long ago as 1885, that, far from being exceedingly unusual, evidence of such a fracture was present in 2 per cent. of dissecting-room subjects examined at that time, and he reported many clinical cases of the injury (*Guy's Hospital Reports*, 1885; BRITISH MEDICAL JOURNAL, 1887; *Clinical Journal*, 1898, etc.).

Secondly, the authors of the article suggest compression force applied from either end of the rib as a probable method of causation. The breadth of the first rib as compared to its thickness would appear to be a complete mechanical negation of such a theory. Sir Arbuthnot Lane showed both experimentally and clinically that the leverage of the clavicle offers a simple mechanical explanation. When the shoulder passes backwards, the clavicle impacts on the first rib at varying points, depending on the plane of its movement. That this is so is shown by the development of an articulation between the two in those habitually carrying heavy weights on the shoulder. If, when in such a position, a blow is struck on the point of the shoulder, one of three things may occur—most commonly a fracture of the clavicle, next in frequency a fracture of the first rib, or rarely a dislocation at the sterno-clavicular joint.

The third point made by the authors is that displacement in fracture of the first rib is quite rare. It is not clear in the text whether bony displacement or displacement of vessels and nerves is meant. If the latter, I would refer them to three cases published by Sir Arbuthnot Lane in 1887, where the displacement of vessels simulated aneurysm of the subclavian, and to many others since then. If the former is meant, while it is impossible to criticize without the *x*-ray picture, I would suggest that the bony tumour they describe is more likely to represent the excessive callus formation which is common in this fracture than actual bone displacement. The so-called protection which the clavicle gives the first rib is a long-lived myth which dies hard; it is, on the contrary, a dangerous and underrated neighbour.—I am, etc.,

London, W., Feb. 9th. E. G. SLESINGER.

HERPES AND VARICELLA.

SIR,—In your issue of February 12th Dr. Carver, in his interesting records of herpes-varicella infection, states that he has been unable to find any recorded instance in which herpes in one patient has clearly given rise to herpes in another patient. An absolute demonstration of infectivity in many presumedly infectious conditions is always difficult. A few days ago I saw a case of this kind in which the coincidence, if it was merely such, was at least suggestive.

On January 28th I was asked to see Mr. X., aged 53, who was suffering from one of the most intense and complete examples of herpes zoster of the right upper fifth nerve which I have ever seen. Curiously enough the amount of pain was and had been comparatively slight. On inquiry, I found that he travelled from Sheffield to London on January 19th, when he spent the night at his sister's house. She was then recovering from an attack of herpes zoster on the trunk. The next day he left London and travelled to Newcastle. Whilst there, on January 22nd, the first symptoms of his attack began by some itching over the right forehead. During the next three days he was out of sorts, slightly feverish, restless at night, and had acute pain in the coracoid hollow on the left shoulder. On the 25th the rash was first noticed, after which it developed rapidly.

Whether the infection had been received during the short time the patient was in his sister's company or not is, of course, quite uncertain. There is, however, a general impression that herpes cases do occur in epidemic-like outbreaks. Ronzier Jolly (quoted in *La pratique dermatologique*, Tome iv, p. 919) recorded the fact that a Parisian suffering from herpes went to stay in a certain small village in Provence. There had been no case of the disease before his arrival. Within six weeks there were seven cases amongst the inhabitants.—I am, etc.,

Sheffield, Feb. 13th. ARTHUR J. HALL.

SIR,—I have been interested in reading the recent correspondence in the JOURNAL and the articles in the issue of February 12th on the association of herpes zoster and chicken-pox, and I should like, therefore, to note the two following cases which have recently come under my care:

1. A woman aged 35 developed herpes on the left leg on December 17th, 1920, and on December 31st her child, who had slept with her, developed chicken-pox.
2. A boy aged 11½ developed herpes round the left side of the chest on January 6th, 1921. On January 20th a brother and a sister started with chicken-pox, and on February 3rd the three remaining members of the family also developed chicken-pox. The only member of the family to escape the chicken-pox was the original patient suffering from herpes.

These cases point to something more than a mere coincidence, and I place them on record merely to add my small quota to the rapidly growing mass of evidence that there is a common causal agent of herpes zoster and varicella.—I am, etc.,

East Cowes, Feb. 13th. S. HARTILL, M.B.Oxon.

THE PREVENTION OF VENEREAL DISEASE.

SIR,—It seems to me paradoxical that members of the medical profession, who must know and should realize the national danger from venereal diseases and the residuary legatees of those diseases, are so divided upon the ritual of prevention.

I am a Churchman, and I realize how impotent all religious cults have hitherto been even to check the baneful incidence of these diseases. Continence, and the fear of contracting these diseases, have not only failed as preventive agents, but my experience is that those influenced by either of the three, often when they do contract them, either conceal their misfortune or apply to quacks for treatment.

In my opinion the most satisfactory results—as I published in your JOURNAL—are attained by carefully explained reasons, and the consistent use of prophylactics. It is far wiser for a father—after pointing out the religious aspect and the advantage of continence—as a good citizen, with a knowledge of human nature, to explain the advantage of prophylaxis should his boy yield to temptation.

As to the instance mentioned some weeks since, of a

mother asking her fourteen-year-old daughter if her prophylactic armament was complete, I would quote the lines of an old hymn:

> "Can a mother's tender care
> Cease towards the child she bare?"

When religion, continence, and prophylaxis have overcome the awful and lasting effects of the present venereal danger, then, and not till then, should we, as a nation, exclude any and all methods tending to prevention.—I am, etc.,

Folkestone, Feb. 13th. P. BROOME GILES.

THE NAVAL MEDICAL SERVICE.

SIR,—I am reading with much interest the correspondence to which you are kindly giving the hospitality of your columns. As a very old ex-surgeon R.N. I think it high time the Admiralty descended from their Olympus and agreed to give their consideration to a question which affects a considerable number of efficient loyal officers, and is also of much importance to the Royal Navy generally. "Surgeon Commander" is quixotic, but I fear there is likely to be a substratum of truth in what he says.

I claim to know something of the subject, having served eight and a half years in the R.N. and four years in the R.A.M.C.

Put very shortly, medical officers in the Navy—including the Director-General—have no real authority; in the Navy, quite rightly, authority and discipline mean everything. Promotion is slow and uncertain; the natural result is irritation and discontent. The commander of a ship is often years younger than the surgeon commander; the former is "Please Sir this," "Please Sir that"; the latter "The —— old doc." No one can deny this; the younger officers and men are apt to take advantage of it, and a social inferiority is taken for granted.

Again, why are not naval hospitals allowed to fly the white ensign? Any ship's whaler may do so; is a naval hospital of less importance to my lords than a small rowing boat?

I have purposely not touched on the matter of pay and emoluments; let "snobbishness" be officially exterminated, and everything else will automatically improve. We are no longer, as Thomas Gale wrote in the sixteenth century, "a great rabblement there that took upon them to be surgeons. Some were sow-gelders, and some horse-gelders, with tinkers and coblers." But if I were writing frivolously, the present great discontent in the Naval Medical Service does look as if there were some potential admiral-gelders about.

Seriously, the Admiralty should look into the matter; there must be quite a large number of retired, and therefore independent, witnesses to get some reliable evidence from. It is no good looking to such moribund institutions as the College of Physicians or College of Surgeons for help.—I am, etc.,

GERALD SICHEL, F.R.C.S.,
Sevenoaks, Feb. 12th. Late Surgeon R.N., Major R.A.M.C.

A NEW SIGN OF PULMONARY TUBERCULOSIS.

SIR,—As Dr. W. J. Hoyten, in the JOURNAL of February 12th, has very kindly drawn attention to the fact that lowering of the external end of the clavicle is described in my book on *Pulmonary Tuberculosis in General Practice*, may I say that I have always regarded this appearance as an ancient and well known sign of somewhat advanced or extensive disease? "Depression both above and below the clavicle is now greatly more marked, and may sometimes be really present to a notable amount, but be masked by *twisting of the clavicle downwards and inwards on its long axis*." The italics are mine, and the quotation is from page 422 of Walshe's *Practical Treatise on the Diseases of the Lung*, 1871. This sign has also been described by foreign authors, ancient and modern; but in our own country there is sometimes a tendency towards the indiscriminate quotation of foreign and often dubious authorities, especially Teutonic, and against the recognition of native writers, dead or living, even to the extent of depriving them of such crumbs of fame as may fall from a bibliographical reference.

There is, however, another sign of pulmonary tuberculosis which, although as old as the disease, has not been described previously, as far as I recollect, in any textbook, but which I have noted in many cases. The sign is *visibility and engorgement of the cephalic vein in the interval between the deltoid and the pectoralis major*. In health the vein is not seen in this place, but when the sign is present the vein is visible throughout its course from the radial end of the dorsal venous arch to the point where it pierces the costo-coracoid membrane. This sign is pathognomonic of interference with the venous circulation, from obstruction in the pulmonary capillaries, from diminished intrathoracic suction during inspiration, or from back pressure from the heart, together with wasting of the superficial fat and of the muscles. Consequently, although not an early sign of pulmonary tuberculosis, it may occur in moderately advanced disease, and also in other diseases where the above conditions are present.—I am, etc.,

London, S.W., Feb. 12th. HALLIDAY SUTHERLAND.

MEDICAL TREATMENT OF ADENOIDS.

SIR,—The interesting letter from Dr. B. G. M. Baskett, on the question of the medicinal treatment of adenoid vegetations as opposed to operation (February 5th, p. 213), calls for certain remarks. I have for years made use of iodine in various forms—such as sodium iodide, potassium iodide, syrup. ferri iod., iodipin, iod-albin, iodoglidine, etc.—in the treatment of a certain class of case of "adenoids."

This is the case in which the chief symptoms manifest are an increased tendency to catch "colds," and the persistence afterwards for two or three weeks of a slight mucous discharge from the nose; there is also usually a tendency to mouth breathing. Iodine will in this class of case, if combined with a change of air to the country or seaside and regular breathing exercises, bring about complete relief. It will be seen that such cases are very slight. Any deafness from Eustachian obstruction, any cervical adenitis or severe and persistent sero-purulent nasal discharge, I regard, quite apart from any other indications, as definite signs that operative interference is needed.

The majority of hospital patients with adenoids—at any rate in this city of Manchester with its damp and dirty atmosphere—would be in no way improved by iodine in any form, and operation is the only possible measure. It is only in slight cases that the exhibition of iodine is useful, and here only when the patient may also be placed under good hygienic conditions—and such cases ought to be seen from time to time, as the incidence of an infective fever such as measles or scarlet fever, or of that form of infective nasal catarrh or "sore throat" which seems to attack schools, may bring about such an increase in the size of the adenoid vegetations and in the symptoms generally that operation will now be necessary.

In my experience iodine, although definitely useful in cases of "adenoids," has very definite limitations to its curative value.—I am, etc.,

Manchester, Feb. 10th. LINDLEY SEWELL.

NASOPHARYNGEAL CATARRH AND TUBERCULOSIS.

SIR,—Surgeon Commander Given, in his paper "Deductions from the statistics of pulmonary tuberculosis," published in your last issue, has called attention to an important factor in the causation of pulmonary tuberculosis when he brings into well deserved prominence the frequently preceding catarrh of the nasopharynx.

In dispensary work one finds that out of an average annual number of 1,000 new cases sent for examination, more than 80 per cent. are suffering from nasal obstruction. Even if there are no signs of external catarrh each nostril should be separately examined, and this examination should not be confined to chest cases, for it is seldom that a "hip" or "spine" does not give a history of previous nasopharyngeal infection.—I am, etc.,

Newport (Mon.), Feb. 13th. J. LEWIS THOMAS.

Obituary.

JAMES CHARLES McWALTER, M.D., LL.D.,
HIGH SHERIFF OF DUBLIN.

As briefly announced in our last issue, Dr. J. C. McWalter, of Dublin, died suddenly at his residence in North Circular Road in the early morning of February 5th, at the age of 53. On the previous evening he had attended a meeting in Merrion Square which lasted until after 9 o'clock, and when the members dispersed Dr. McWalter's last tramcar had gone. He made a great effort to reach the other side of the city on foot before curfew, and entered his house in a state of exhaustion. The news of his death caused a painful sensation among all classes of citizens in Dublin.

Educated at the Christian Schools and the Catholic University of Dublin, Dr. McWalter qualified with the licence of the Royal College of Surgeons in Ireland and of Apothecaries' Hall, Dublin, in 1897, taking the D.P.H. in 1900. Later in his career he graduated M.A. and M.D. of Trinity College, Dublin, and M.A. of the Royal University of Ireland, and he obtained many other degrees and distinctions in arts and medicine, both at home and abroad. In 1907 he was called to the Irish Bar, and the degree of Doctor of Laws, both of the National University of Ireland and of Ottawa University, was later conferred upon him.

Dr. McWalter took a prominent part in public life. He was a member of the Senate of the National University of Ireland, a member of the Royal Irish Academy, and had been a governor of Apothecaries' Hall. He was an alderman of the Dublin Corporation and he was appointed High Sheriff of Dublin in 1920. In politics he was a Constitutional Nationalist, who did not conceal his dislike of Sinn Fein. During the great war he served with the R.A.M.C. in the Mediterranean area, retiring with the rank of captain. He was the author of several publications, including a history of the Irish Apothecaries' Hall, and he wrote a great many articles and letters, especially on problems of public health.

A regular attendant at the annual meetings of the British Medical Association, he was vice-president of the Section of Pharmacology and Therapeutics at the annual meeting at Aberdeen in 1914; he was vice-president of the Leinster Branch of the Association. Some years ago he married the daughter of Mr. John Crowley of Clontarf, and she has received messages of sympathy from all parts of the city and of Ireland.

Dr. McWalter's interests were as varied as his character was many-sided; he was known in every circle in Dublin, but more especially among the poor of the city, who have lost in him a generous champion and helper. Modest and unassuming, ever moving about, though without fuss or apparent anxiety; gentle and kindly towards patients or callers as towards opponents in controversy, he was for years one of Dublin's outstanding citizens. In politics, as in everything else, he was outspoken and straightforward, and those who differed from him always acknowledged his transparent sincerity. The writer of a character sketch in the *Irish Independent* describes McWalter as belonging to a type that is fast becoming extinct in Ireland—a type prevalent a quarter of a century ago, but rare to-day—original, elusive, many-sided; of sound common sense one moment, annoying the next, amusing now, bitter then; but taking him all round, whether in or out of one of his moods, a sincere and delightful personality. As a controversialist he was better on paper than in debate. National life was barren in his young days, so he turned to words and allowed his passion for them to overmaster him. "He wrote hard and he spoke hard, yet on the day of his death he had not a personal enemy in all Ireland."

DR. ROBERT HARRIS, of Southport, died on February 5th, aged 73. He was educated at University College, London, and later at Guy's Hospital. He took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1869, and graduated M.B.Lond. in 1872. After practising for fourteen years in London in partnership with his father, he removed to Southport, where he continued to practise his profession until his retirement some thirteen years ago. He took great interest in the work of the British Medical Association, and had served as secretary of the Southport Division, and as a member of the council of the Lancashire and Cheshire Branch, of which he was appointed president in 1918–19. He was an ex-president of the Southport Medical Society. In recognition of his services to the medical profession the local practitioners in 1914 presented him with a silver salver and Mrs. Harris with a silver teapot. Since his retirement from practice Dr. Harris took great interest in public affairs, was appointed to the Commission of the Peace for the borough in 1917, and was a regular attendant on the bench.

WE regret to announce the death, at the early age of 43, of Dr. THOMAS GEORGE MILES, of Ruardean, Gloucestershire, which occurred from acute pneumonia on February 4th. Dr. Miles's practice was a large one, covering a wide district in the Forest of Dean, and he was attending patients up to the day before his death. The son of a doctor, Dr. Miles was educated at Guy's Hospital, and was a house-surgeon in Plymouth and in practice in Lancashire before coming to Ruardean twelve years ago. He was local secretary of the Forest of Dean Division of the British Medical Association, and took a large share in the public work of the district. He was a member of the Gloucestershire County Council and of the County Insurance Committee, a keen sportsman, who was until recently honorary secretary of the local Rugby Football Combination, a prominent Freemason, and a high office-bearer in the Order of Buffaloes, an order in which Dr. Miles took a special interest. The widow, who has received many marks of sympathy, is left with three children.

The Services.

DEATHS IN THE SERVICES.

LIEUT.-COLONEL HENRY PEERS DIMMOCK, Bombay Medical Service (retired), died at Sydenham on January 23rd, aged 64. He was born on January 16th, 1857, the son of the late James Augustus Dimmock, bank agent, Ely, educated at St. George's, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1879; subsequently graduating as M.D.Durh. in 1898. He entered the I.M.S. as surgeon on March 31st, 1880, became Lieut.-Colonel after twenty years' service, in 1900, and retired, with an extra compensation pension on April 15th, 1911. His first seven years' service was in military employ, during which he served with the 2nd Biluch Infantry, on the North-West Frontier of India, in the Marei expedition of 1880–81. Entering civil employ in September, 1887, after four years in various stations, he was appointed obstetric physician of the Jamsetji Jijibhai Hospital, Bombay, and professor of midwifery in the Grant Medical College, Bombay, in June, 1891; and twelve years later, in November, 1903, he became also principal of that college. He rejoined for service in the recent war from August, 1916, to 1918, and was appointed commanding officer of the Holborn Military Hospital, Mitcham, containing 1,000 beds, for which he was awarded the O.B.E. in June, 1919. His strenuous work during that period put a heavy strain upon his health. When plague broke out in Bombay a quarter of a century ago, he served as a member of the special plague committee in that city from March, 1897, to May, 1898. He was the author of a small work on cerebro-spinal meningitis in Indian gaols.

Universities and Colleges.

UNIVERSITY OF MANCHESTER.

MR. ARTHUR H. BURGESS, M.B., M.Sc., F.R.C.S., surgeon to the Manchester Royal Infirmary, and lately Lecturer on Practical Surgery in the University, has been appointed Professor of Clinical Surgery.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council was held on February 10th, when Sir Anthony Bowlby, President, was in the chair.

Issue of Diplomas.—Diplomas of membership were granted to the candidates found qualified at the recent examinations, whose names were published last week (p. 252) in the report of proceedings of the meeting of the Royal College of Physicians.

Diplomas in Ophthalmic Medicine and Surgery were granted to seven candidates (BRITISH MEDICAL JOURNAL, February 5th, p. 214).

Central Midwives Board.—Dr. W. S. A. Griffith was reappointed to represent the College on the above Board for the period of one year from March 31st, 1921.

Election of Four Members of Council.—The President reported that a meeting of the Fellows would be held at the College on Thursday, July 7th, for the election of four Fellows into the Council in the vacancies occasioned by the retirement in rotation of Sir George H. Makins, Mr. J. Ernest Lane, Mr. H. J. Waring, and Mr. F. F. Burghard; that notice of the meeting

would be given to the Fellows by advertisement and by circular on March 11th; that March 21st would be the last day for the nomination of candidates; and that a voting paper would be sent on April 5th to every Fellow of the College whose address is registered at the College.

Medical News.

ON Monday next, February 21st, at 5.30 p.m., a meeting will be held at the house of the Royal Society of Medicine, to hear statements as to medical education in China. Sir Donald MacAlister, President of the General Medical Council, will be in the chair, and Mr. Harold Balme, F.R.C.S., Dean of the Faculty of Medicine of the Shantung Christian University, Tsinan, will give an address. The American Ambassador hopes to be present, and the new Chinese Ambassador will be represented by Mr. Owyang King, First Secretary of the Legation. Among others who hope to be present are the Right Hon. Sir Clifford Allbutt, K.C.B., President of the British Medical Association, Sir Alfred Pearce Gould, Sir Francis Champneys, Bt., and Sir John Jordan, formerly British Ambassador in Peking.

THE Council of Epsom College will shortly award "France" Pensions of £30 a year to aged medical men in necessitous circumstances, as well as a St. Anne's Home Scholarship to the orphan daughter of a medical man between the ages of 9 and 12. Full particulars can be obtained from the secretary, Mr. J. Bernard Lamb. An announcement appears in our advertisement pages this week stating that applications for admission of candidates for pensionerships and foundation scholarships at Epsom College, and for an examination for the admission of boys as Council Exhibitioners, who pay 50 guineas a year for education and board instead of 100 guineas, the usual fee, must be received at the office, 49, Bedford Square, London, W.C.1, by the morning of March 2nd.

IN view of statements which have appeared in the lay press with regard to an influenza epidemic, we are informed by the Ministry of Health that, whereas for the week ending February 7th, 1920, the number of deaths from influenza in ninety-six great towns of England and Wales was 98, the number for the corresponding week of the present year—the week ending February 5th, 1921—in the same ninety-six towns was only 61. The number of cases in the week ending December 25th in the ninety-six great towns was 81, in the following week it was 89, and in the week ending January 8th it was 101; since then it has declined to the figure above mentioned. There is a sporadic outbreak of influenza at Aldershot.

A COURSE of twelve lecture-demonstrations on gonorrhoea will be given by Mr. E. R. T. Clarkson and Mr. Malcolm Simpson (Chief Assistants to the Genito-Urinary Department of the hospital) on Tuesdays, Wednesdays, Thursdays, and Fridays, at 4.30 p.m. in the Venereal Out-Patient Department of the London Hospital, beginning Tuesday, March 1st. Members of the medical profession are invited to attend.

A MEETING of the medical practitioners in Bradford was held on February 10th to consider the report of the Local Medical Advisory Committee upon the scheme for the administration of St. Luke's Hospital, Bradford, as a municipal general hospital. The committee reported that the scheme before it appeared to aim at establishing a municipal hospital of such magnitude that it would lead to the extinction of the existing voluntary institutions, and expressed the view that the present is an inopportune time to launch an elaborate and costly scheme such as the medical officer of health proposes. The committee's detailed report was approved by a large majority.

ON the occasion of his retirement from practice in Newton Stewart, Wigtonshire, Dr. N. J. McKie, who has been in practice there for over thirty years, was made the recipient of a public testimonial, his wife and family also being included. Dr. McKie was formerly vice-chairman of the Border Counties Branch of the British Medical Association, and has been well known as a successful practitioner. He is a prominent Freemason, and on the occasion of his leaving the district the local masonic lodge, "St. Ninian" 499, took the opportunity of presenting him with a valuable past master's jewel.

AT a meeting of the Royal Sanitary Institute, on Friday, February 25th, at the College of Technology, Manchester, discussions will take place on "The use of open fires for domestic heating," opened by Dr. Margaret Fishenden, and on "Air pollution," opened by Professor J. Radcliffe. At 90, Buckingham Palace Road, London, S.W., on Tuesday, March 8th, at 5 p.m., the Institute will again meet, and discussions on "The sanitary engineering side of town planning" and "Town planning of built-on areas" will be opened by Mr. Edward Willis and Mr. George Pepler respectively.

A MEETING of the School Medical Service Group of the Society of Medical Officers of Health will be held this day (Saturday, February 19th), at 11.30 a.m., at 1, Upper Montague Street, Russell Square, London, W.C. Among the subjects for discussion are uniformity of medical inspection cards and schedules, and superannuation and security of tenure. Members of the School Medical Service who are not members of the society will be welcome as visitors. The honorary secretary is Dr. Armly Ashkenny, Health Department, West Bromwich.

THE annual meeting of the Mental After-Care Association for poor persons convalescent or recovered from institutions for the insane will be held on Wednesday, February 23rd, at 3 p.m., at Bridewell Royal Hospital, New Bridge Street, E.C. The chair will be taken by Sir Charles Wakefield, President of Bridewell and Bethlem Royal Hospitals, and the speakers will be the Bishop of Barking, Sir William Byrne (Chairman of the Board of Control), the Hon. John Mansfield (Lord Chancellor's Visitor in Lunacy), and Dr. Nathan Raw, M.P.

THE annual congress of the Ophthalmological Society of the United Kingdom will be held on May 5th, 6th, and 7th, at the Royal Society of Medicine, 1, Wimpole Street, W.1. The President, Mr. J. Herbert Fisher, will give his opening address on Thursday, May 5th, at 10 a.m.

MR. GEOFFREY JEFFERSON and DR. A. H. HOLMES have been appointed lecturers on clinical anatomy at Manchester University, the former to deal with the surgical and the latter with the medical aspects of the subject.

SIR NAPIER BURNETT, K.B.E., M.D., has been appointed chief executive officer of the Joint Council of the British Red Cross and the Order of St. John.

AT the sitting of Lord Cave's Committee of Inquiry into Hospital Finance, held on February 9th, evidence was given by Mr. Gilbert G. Panter (Secretary) on behalf of the Committee of Management of the Great Northern Hospital.

DR. GUSTAVE MONOD, M.R.C.P., of Vichy, will demonstrate on Wednesday next, February 23rd, at 5 p.m. at the Royal Society of Medicine a series of films in which the rate is retarded in the manner found useful for the study of movement, including the walk of men suffering from various forms of war injuries and the wearers of artificial limbs. The films Dr. Monod will show will include one on the cardio-pulmonary circulation obtained in Professor Carnot's laboratory, another giving an analysis of golf shots made at the Institut Marey, Paris, and a third exhibiting various athletic movements. Dr. Monod brings with him a message from the Association pour le Developpement des Relations Médicales of the Paris Faculté de Médecine. The hope is that a definite entente may be established between the French and British professions through the association in Paris and the Fellowship of Medicine in London.

THE London County Council retains the services of three medical men for the purpose of medical examinations in connexion with claims arising from tramway accidents. Each is paid a retaining fee of £42 a year, 10s. 6d. for each examination within the county, £2 2s. for each attendance at court to give evidence, and a special fee, based upon distance and time, for examinations outside the county. The time having come for a revision of the arrangement, these medical men asked that the increase of 50 per cent. in the retaining fee granted three years ago should be applied to the other fees, in view of the increased cost of postage, telephone, travelling, etc. The Council on February 1st decided not to alter the retaining fee nor the fee of £2 2s. a day for attendance in county courts, but to increase by 50 per cent. the fee of 10s. 6d. for each examination and the fee of £2 2s. a day for attendance in the High Court.

THE Great Northern Central Hospital has graded its accommodation into three sections, comprising 140 beds in the general wards, 62 beds in the contributory wards, and 18 beds in the private wards. In the general wards necessitous cases are admitted free, but patients who can afford to do so give from 1s. to 20s., according to circumstances. The contributory wards are intended for those unable to meet the full expenses of medical service and nursing at home, and they give, while in the hospital, from £1 1s. to £4 4s., according to their means, as assessed by the committee. The treatment of patients in the general and contributory wards is undertaken gratuitously

by the honorary medical staff. The private wards, which have just been inaugurated, are intended for the benefit of patients whose means do not allow of the payment of the usual medical and surgical fees, but who are willing to contribute towards the cost of medical services and maintenance while in hospital. The payments range from 4½ to 6 guineas per week, with a fee for medical service of £1 1s. per visit—maximum fee for medical service, £3 3s. per week. In the event of an operation a charge of £5 5s. will be payable, which will cover the reduced fees of the surgeon and the anaesthetist, and the charge for the use of the theatre. By arrangement with a member of the honorary medical staff and the patient concerned, private practitioners may attend the hospital to share in the treatment. The patient in this case pays the local medical practitioner's fee. In assessing the amount payable by patients the committee will arrange for a rebate of 50 per cent. off the medical fees where the income is the minimum for the private wards, or exceed the minimum up to £100.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediscra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin:* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"G. D. M." bought his practice in March, 1919. He asks whether he can be assessed for 1919–20 on the average of his own earnings as a surgeon lieutenant in the navy over the three previous years.

*** No; the legal basis of assessment is the average profits of the purchased practice over those three years, subject to the proviso that "G. D. M." can apply to be assessed on the earnings of the year 1919–20 if the profits have fallen short from some specific cause since or by reason of his succession to the practice.

"J. L. D." bought a car for professional use in 1914 for £250, and sold it for £200 on joining the army; he has since claimed to deduct £350 cost of renewal, as he has paid £550 for a car no better than the one purchased in 1914 for £250. The Income Tax Commissioners refuse to allow the £350 without giving any reason.

*** Our correspondent's claim appears to be in accord with the principle and specific examples expounded by Mr. Hopkins, an official witness, before the Royal Commission on Income Tax. We advise "J. L. D." to point this out to the local inspector of taxes, and to ask for reconsideration of the question. The appeal lies to the local or special Commissioners of Taxes, provided that the assessment was objected to within twenty-one days of the receipt of the notice of assessment.

"MEDICAL INSPECTOR" inquires as to the expenses deductible from the Schedule E assessment on his stipend.

*** Expenses incurred wholly, exclusively, and necessarily in the performance of the duties of the office can be deducted provided that they are not of a capital nature. It is impossible to give a categorical reply without knowledge as to the precise conditions of the appointment and the degree of assistance, if any, given by the authority—for example, the provision or otherwise of a medical reference library. Prima facie, the expenses mentioned are allowable to the extent to which they are actually laid out in the year in the maintenance, but not the original provision or improvement, of our correspondent's essential equipment.

"INQUIRER" purchased a practice for a certain sum, which he is paying off in annual instalments. He asks whether he can deduct the payments from his practice receipts for income tax purposes.

*** No; the payments are none the less of a capital nature because they are being spread over a more or less lengthy period instead of being made in a single sum.

LETTERS, NOTES, ETC.

THE writer of the obituary notice of the late Dr. F. H. Dayus, printed in the JOURNAL of February 12th, stated that Dr. Dayus "shared with Dr. Dain, of Birmingham, the distinction of being one of the two medical chairmen of Insurance Committees." We now learn that Dr. R. Harding and Dr. E. J. Maclean have long been chairmen of the Radnorshire and the Cardiff Committees respectively; and there may be other medical chairmen of Insurance Committees.

"INCITAMIN."

IN our issue of January 29th (p. 179) we replied at some length to an inquiry regarding incitamin, an organic preparation devised by Professor Fischer of Copenhagen for the treatment of wounds and ulcers. The latest contribution to the spirited discussion of this topic in our Danish contemporary *Ugeskrift* is a letter from Dr. E. Himmelstrup in the number for January 20th. He points out that Professor Fischer's paper on this subject suggested an uninterrupted series of successes; at any rate no mention was made of failures. Yet the one case Dr. Himmelstrup has been able to investigate was an utter failure as far as treatment with incitamin was concerned. The patient had suffered for several months from severe and extensive *x*-ray ulceration. Neither the pain nor the ulceration was affected by the prolonged use of incitamin.

SUPERNUMERARY NIPPLES.

DR. EDMUND CAUTLEY (London, W.) writes: In reply to Dr. Skerrett's inquiry in last week's JOURNAL, polythelia (supernumerary nipples) is not uncommon, and is often associated with polymastia, which is said by Iwai to be present in 5.19 per cent. of Japanese women and in 1.6 per cent. of the men. It is less common in this country. During pregnancy such nipples may become more prominent and more readily erectile. If mammary tissue is also present, pricking and other sensations are felt, as in the normal breast, and turgescence occurs. Occasionally polymastia is the result of dichotomy of a single gland, or is a spontaneous variation. The peculiarity runs in families and is usually transmitted by females. In Dr. Skerrett's patient transmission was paternal.

DR. D. H. VICKERY (Ministry of Pensions Hospitals, Neath, Glam.) writes with reference to Dr. Skerrett's note on supernumerary nipples (February 12th, p. 254): The rarity consists more in finding them well developed. Recently at an operation this condition was noticed in a man, and the development was so advanced I had a sketch made. The areolae were exceptionally developed and were studded with hairs. Anyone interested in the matter can gladly have this life-like sketch for inspection.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 35, 38, 39, and 40 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 36 and 37.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line...	0	1	6
Whole single column (three columns to page)	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.